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EVALUATION OF TREATMENT OF HYPERTENSION

WINCHELL McK. CRAIG, M.D.
Rochester, Minn.

Essential hypertension, similar to all disease entities the causes of which are obscure, has a tendency to progress as time and age advance. It requires careful and frequent observation, and treatment should be instituted before severer stages of the disease develop. Abnormal elevation of the blood pressure may persist for years in a minimal degree without producing symptoms or disability, and severer elevation of blood pressure may respond to medical management and remain under control without proving disabling or showing evidence of progression. The problem confronting the medical profession today is the control of progressive hypertension and the prevention of irreparable damage to the various structures of the body.

Not much is known about the mechanism of elevation of the blood pressure in essential hypertension. Three factors are responsible for maintaining normal blood pressure, and derangement of any one of these may cause a change in the blood pressure. The cardiac output, the volume or viscosity of the blood and the resistance to the flow of the blood through the peripheral arterial system determine the blood pressure. Cardiac output or viscosity of the blood is not altered in essential hypertension, but the caliber of the peripheral vessels is decreased. The decrease in diameter of the peripheral vessels is attributable to (1) a condition inherent in the arterioles and (2) an abnormal reaction of the arterioles to vasomotor stimuli.

There is a large hereditary factor in essential hypertension. Ayman [1] found that if both parents had absolutely normal blood pressure the incidence of elevated blood pressure among the children was only 3 per cent. In families in which one parent had hypertension the incidence rose to 28 per cent, and in families in which both parents had arterial hypertension the incidence was 45 per cent. Hines and Brown [2] have shown that a family history of hypertensive cardiovascular disease is five times more frequent among persons who have hypertension or who are hyperreactive to a standard stimulus (immersion of the hand in ice water) than it is among persons who react normally to the test. Probably a sensitive and hyperreacting sympathetic nervous system responds abnormally and produces unusual vasoconstriction as a result of various emotional reactions, and this may lead to the so-called neurogenic hypertension.

Wagener and Keith [3] have classified essential hypertension into four groups as follows: (1) slight to moderate increase in the blood pressure, becoming normal as a result of rest, and slight sclerosis of the retinal arteries, usually without symptoms; (2) moderate to severe hypertension, moderate sclerosis of the retinal arteries, and occasionally venous thrombosis; clinical symptoms are present or absent; (3) moderately severe hypertension and angiospastic retinitis, almost always associated with clinical symptoms of hypertension, and (4) severe hypertension, angiospastic retinitis, edema of the optic disks and, always, clinical manifestations of hypertension.

The hypertension of any patient may progress from group to group, and the mortality rate among patients who have hypertension groups 1 and 2 is 30 and 42 per cent respectively in four years. The mortality rate among patients who have hypertension classified as group 3 is 78 per cent in four years, and in group 4, 98 per cent.[4] This high mortality rate should be noted carefully by those who are inclined to consider that hypertension is not ordinarily a serious disease. Malignant hypertension and essential hypertension are not separate conditions, for malignant hypertension is a type of essential hypertension. The term "malignant" is used loosely to designate severe forms of hypertension. The seriousness of hypertension ordinarily parallels the progress from group to group, and any treatment, especially the surgical treatment of hypertension, must show a control of the progress from one group to another or a lessening in the severity of the hypertension and the symptoms.

The treatment of essential hypertension should not be delayed until the blood pressure tends to become decidedly elevated and fixed and symptoms are incapacitating, but should be instituted in the early stages of the disease. The disease process is so distributed throughout the body that irreparable damage to the heart, kidneys and vessels as well as to other structures usually occurs before any attempt to control the progress is made. Little therapeutic interest has been centered on early or potential hypertension in spite of definite evidence that heredity plays a part in the causation, that hyperreactive children have been found and that a

From the Section on Neurosurgery, Mayo Clinic, Rochester, Minn.
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1. Ayman, D.: Heredity in Arteriolar (Essential) Hypertension: A Clinical Study of the Blood Pressures of 1,524 Members of 277 Families, Arch. Int. Med. **53**: 792-802 (May) 1934.

2. Hines, E. A., Jr., and Brown, G. E.: The Hereditary Factor in the Reaction of Blood Pressure to a Standard Stimulus (Cold): Preliminary Report. Proc. Staff Meet., Mayo Clin. **10**: 371-373 (June 12) 1935.

3. Wagener, H. P., and Keith, N. M.: Diffuse Arteriolar Disease with Hypertension and the Associated Retinal Lesions, Medicine **18**: 317-430 (Sept.) 1939.

4. Keith, N. M.; Wagener, H. P., and Barker, N. W.: The Problem of Prognosis in Essential Hypertension: A Follow-Up Study in Two Hundred and Nineteen Cases, Tr. A. Am. Physicians **53**: 81-86, 1938.

recent report from one of the leading medical schools revealed that 20 per cent of the students were found to have evidences of arteriosclerosis. Treatment may be classified as expectant, physiologic and palliative. Expectant treatment should consist of early detection of the disease and the outlining of a program for hyperreactors or patients with early hypertension. These potential hypertensive persons should be warned against excessive smoking, and an attempt should be made to guide their activities and thinking with regard to their health. This has been done in similar diseases.

The physiologic type of therapy is already in effect. It consists first of medical measures such as the use of rice and low-sodium diets and the administration of such drugs as thiocyanates, the barbiturates, rutin, Veratrum viride and other measures to lower the blood pressure, guard against cerebrovascular accidents and relieve the incapacitating symptoms.

The medical treatment of slight essential hypertension is usually satisfactory, and some patients who have moderate hypertension of group 1 or 2 respond rather well for a time. A nontoxic, adequate and prolonged vasodilator would solve the problem of treatment in many cases. The nitrites, drugs of the acetylcholine series, histamine and tetra-ethyl-ammonium chloride or bromide have in common a vasodilating action, but, owing to their temporary physiologic effect, their therapeutic value has not been lasting or permanent. Potassium thiocyanate has proved effective, both before and especially after operation, but the dosage must be carefully regulated. The sedatives, particularly the barbiturates, are the most valuable drugs. The amount of sedative drug which should be given three or four times a day should be great enough to abolish nervousness and restlessness and small enough to avoid drowsiness and excessively slowed mental reactions. Many patients suffering from essential hypertension, however, do not respond adequately to medical treatment, and surgical treatment should be considered.

While it is true that slight hypertension may persist for many years without evidence of progression, there are many cases in which surgical treatment is not considered until after the disease has progressed to severe stages with irreversible changes in the vessels of the heart, kidneys, brain and other organs. As with the treatment of cancer of twenty years ago, so under the present setup neurosurgeons are attempting to alleviate symptoms produced by organic changes far beyond the scope of physiologic surgery. To neurosurgeons the answer is early surgical attack, and results confirm this impression.

The surgical treatment of essential hypertension has been accepted by the profession as a therapeutic measure to be employed in cases in which the disease proves resistant to medical and dietary regimens. The results following surgical treatment have not been uniform with regard to lowering of blood pressure or the relief of symptoms. The many factors contributing to the elevation of the blood pressure, such as heredity, environment and emotional and physical stability, must play an important role in the response to sympathetic denervation of a portion of the body.

A search is being made for a test which will differentiate between the patients who will and those who will not respond to surgical measures. So far no such test or tests have been found. However, observation of the patient during rest in bed and the use of barbiturates, sodium nitrite and tetra-ethyl-ammonium chloride or bromide have aided in indicating those patients most unlikely to respond. Actually the physiologic response of the entire organism to sympathetic denervation must depend on the capacity of the vessels and tissues of the body to alter their functions. If they are not capable, because of irreversible changes in their cells, of doing so, then beneficial therapeutic effects cannot be expected.

On the basis of a review of a large series of cases in which the subdiaphragmatic operation had been done over a period of years and a series in which the thoracolumbar procedure had been followed, it is the impression at the clinic that the more extensive operation has been followed by more lasting and more nearly complete relief of symptoms and lowering of blood pressure. Smithwick[5] performed both the supradiaphragmatic and infradiaphragmatic operations, and later he combined the procedures; he found that the combination was more efficacious. In some of the cases in which the infradiaphragmatic operation had been done and in which the symptoms and elevation of blood pressure recurred after a number of years, the thoracic portion of the sympathetic trunk and splanchnic nerves was removed in the Mayo Clinic and elsewhere with decided improvement.

The surgical treatment of essential hypertension is physiologic in the early stages of the disease and palliative in the later or more advanced stages. Just how early in the development of hypertension surgical treatment should be advised is a question which is being seriously considered in the various medical centers interested in the problem. Also, the question of how extensive the early operations should be is being considered, as the possibility of more conservative operations in the early stages of the disease and more radical procedures in the later stages has received more than the usual amount of thought and discussion.

Various types of sympathectomy have been carried out and studied extensively both preoperatively and postoperatively. In contrast to many operations performed on human beings which have as their principle the removal of pathologic tissue, the operative treatment of hypertension is based on a physiologic response of the patient. As Grimson[6] has stated, the lowering of the blood pressure following sympathectomy has been directly proportional to the extent of the sympathectomy and inversely proportional to the severity of the disease.

Psychosomatic medicine has been discussed in connection with the origin and treatment of many diseases, and Weiss[7] has stated that the organic tradition in medicine has been responsible for a narrow view of the cause and treatment of essential hypertension. He has expressed the belief that there are two psychic tendencies that seem to stand in close relationship to hypertension, namely, anxiety and rage. The psychosomatic concept emphasizes the necessity of total evaluation based on combined physical and psychologic study of the patient. The patient must be free of the phobia of his high blood pressure and he must be allowed to express his aggression along more nearly normal channels. Weiss has said that lowering of the blood pres-

5. Smithwick, R. H.: A Technique for Splanchnic Resection for Hypertension: Preliminary Report, Surgery **7**: 1-8 (Jan.) 1940.
6. Grimson, K. S.: The Surgical Treatment of Hypertension: Collective Review, Internat. Abstr. Surg. **75**: 421-434 (Nov.) 1942.
7. Weiss, E.: Psychosomatic Aspects of Arterial Hypertension, Am. Pract. **2**: 19-24 (Sept.) 1947.

sure does not constitute the sole approach to the problem of hypertension, nor can hypertension be eradicated by any psychotherapeutic process, but almost every patient with essential hypertension can be benefited by psychotherapy. Physicians have been too much concerned with physical measurements of hypertension and have been too little concerned with emotional life, and the study of both may hold the key to satisfactory management of the hypertensive patient.

SURGICAL TREATMENT

The postoperative results have revealed that patients with high fixed hypertension associated with diffuse arterial sclerosis are not materially benefited by operation. For that reason certain criteria have been sought by which to prognosticate the postoperative results. Observation at rest, sedation with the barbiturates and response to anesthesia have all been tried with varying results. Comparison of the various groups of hypertension, both before and after operation, have shown that patients suffering from severe hypertension, in the later stages of the disease, may show decided clinical improvement after operation, but such improvement is not permanent.

The multiplicity of operations [8] which have been tried and the controversy which has been aroused with regard to the application and to the results is testimony itself that one procedure has not proved infallible. All operations for the relief of essential or primary hypertension have a basic physiologic objective consisting of the denervation of the vascular tree of the abdominal viscera and the lower extremities. All operative procedures take cognizance of the fact that failure results if cardiac or renal functions are both significantly impaired. Irreversible changes in the vascular, muscular and nervous systems, as well as in the heart, kidneys and other vital organs, indicate a condition not amenable to this physiologic type of operation.

Thus far, in a review of the results of operation in the treatment of hypertension, it is evident that two types of responses are significant. In one group of cases there has been a definite control of the progression of the disease, as evidenced by a lowering of both the systolic and diastolic pressures for varying periods of time. In another group there has been a decided relief of the distressing and disabling symptoms without a startling lowering of the blood pressure. This is true in spite of a definite objective of lowering the blood pressure primarily and of relieving the symptoms secondarily.

In the acquisition of experience with the different operative procedures in conjunction with careful preoperative and postoperative studies and a longer period of observation, much has been learned. In view of the fact that all surgical procedures have been followed by some lowering of blood pressure and alleviation of symptoms and are attended with a relatively low rate of mortality, with the exception of the rhizotomies, which have been abandoned,[8a, b] it is possible that they can be used individually in the treatment of various phases or stages of hypertension. This has proved true in many controversial operative surgical procedures in general surgery and in the other surgical specialties.

TYPES OF OPERATION FOR HYPERTENSION

I. Rhizotomy: intraspinal division of anterior or motor roots of sixth thoracic to second lumbar nerve

II. Rhizotomy: intraspinal division of anterior or motor roots of ninth thoracic to second lumbar nerve

III. Sympathectomy and splanchnicectomy
- (*a*) Subdiaphragmatic, first and second lumbar nerves
- (*b*) Supradiaphragmatic, tenth, eleventh and twelfth thoracic nerves

IV. Sympathectomy and splanchnicectomy
- (*a*) Transdiaphragmatic, ninth thoracic to second lumbar nerve
- (*b*) Transdiaphragmatic, third thoracic to second lumbar nerve
- (*c*) Combined subdiaphragmatic and supradiaphragmatic
  1. First thoracic to fourth and fifth lumbar nerves
  2. Seventh thoracic to second lumbar nerve

So much has been written concerning the different technics that it seems unnecessary to refer to them in detail (outline). Suffice it to say that rhizotomy extending from the sixth thoracic nerve to the second lumbar nerve was carried out with the idea of interrupting the sympathetic impulses to the splanchnic vessels and the vessels of the lower extremities.[8a] The operation proved to be of such magnitude and carried with it so much risk, not only of physical disability but of death, that it was abandoned as being surgically hazardous. However, before this procedure was abandoned, it was modified to involve the ninth thoracic nerve to the second lumbar nerve.[8b] Some gratifying results were obtained with the latter without the extensive operation and risk involved in the former. This demonstrated that in some cases a modified procedure was effective.

The rhizotomies, which interrupted the sympathetic impulses to the splanchic region, were followed by a lowering of the blood pressure and a relief of symptoms. This aroused interest in approaching the problem from the extraspinal route. The intrathoracic supradiaphragmatic resection of the tenth, eleventh and twelfth thoracic sympathetic ganglions and the intervening trunk, along with a corresponding section of splanchnic nerves, was carried out, and several large series of patients have been followed for a period of years.[8c] The results as reported are impressive, both as regards the lowering of the pressure and the alleviation of symptoms.

The subdiaphragmatic operation, consisting of the removal of the splanchnic nerves and the first and second lumbar sympathetic ganglions along with the intervening trunk, has been carried out in many series, the results of which show a definite advance in the surgical treatment of hypertension.[8d, e] Preoperative and postoperative studies over a period of years prove without a doubt that in some cases there has been a definite and lasting physiologic response to this type of denervation.

8. (*a*) Adson, A. W., and Brown, G. E.: Malignant Hypertension: Report of Case Treated by Bilateral Section of Anterior Spinal Nerve Roots from the Sixth Thoracic to the Second Lumbar, Inclusive, J. A. M. A. **102**: 1115-1118 (April 7) 1934. (*b*) Brown, G. E.; Craig, W. M., and Adson, A. W.: The Treatment of Severe Essential Hypertension: Effects of Surgical Procedures Applied to the Sympathetic Nervous System, Minnesota Med. **18**: 134-138 (March) 1935. (*c*) Peet, M. M.: Splanchnic Section for Hypertension: A Preliminary Report, Univ. Hosp. Bull., Ann Arbor **1**: 17-18 (June) 1935. (*d*) Adson, A. W.: Essential Hypertension: A Report of the Results Obtained by Bilateral Ventral Rhizotomy (Sixth Thoracic to Second Lumbar Roots) and Bilateral Resection of Splanchnic Nerves, J. Nerv. & Ment. Dis. **82**: 190-193 (Aug.) 1935. (*e*) Adson, A. W., Craig, W. M., and Brown, G. E.: Surgery in Its Relation to Hypertension, Surg., Gynec. & Obst. **62**: 314-331 (Feb.) 1936. (*f*) Hinton, J. W., and Lord, J. W., Jr.: Operative Technique of Thorocolumbar Sympathectomy, Surg., Gynec. & Obst. **83**: 643-646 (Nov.) 1946. (*g*) Poppen, J. L.: Technic for Supradiaphragmatic and Infradiaphragmatic Sympathectomy for Hypertension, Lahey Clin. Bull. **3**: 151-158 (July) 1943; correction, ibid. **3**: 187 (Oct.) 1943. (*h*) Grimson, K. S.: Total Thoracic and Partial to Total Lumbar Sympathectomy and Celiac Ganglionectomy in the Treatment of Hypertension, Ann. Surg. **114**: 753-767 (Oct.) 1941; The Symnathetic Nervous System in Neurogenic and Renal Hypertension: Experimental Correlation and Clinical Consideration, Arch. Surg. **43**: 284-305 (Aug.) 1941.

Because of this impression that both the supradiaphragmatic and the subdiaphragmatic methods of resection of the splanchnic nerves and the sympathetic ganglions had their advantages and that probably a more extensive denervation would be followed by a greater response, the two were combined into the transdiaphragmatic type of surgical procedure.[5] This procedure has been modified until now it has been accepted as one which may be applicable to a group of patients who have not responded as well as had been hoped for to the other procedures..[5f, g]

Thus have developed the different types of operation for the denervation of the so-called splanchnic vascular bed and the vessels of the lower extremities. There is no doubt that the more extensive types of denervation have their advantages but also their disadvantages.[5f, h] It has been proved both experimentally and clinically that a too extensive resection of the sympathetic nervous system is followed by changes in certain functions subservient to these nerves. In the quadrilateral sympathectomy for the relief of vascular disease, such as thromboangiitis obliterans and Raynaud's disease, there is an absence of sweating in all extremities, throwing the burden of bodily sweating on the unaffected area. This is true with the more extensive resection of the thoracic and lumbar sympathetic ganglions and, even though the response relating to the hypertension may be superior, the comfort of the patients, especially those who live in a warm climate or even those who live in a changing climate, must be considered. Excessive sweating of any part of the body can be disabling and incapacitating, as evidenced by the patients suffering from hyperhidrosis.

EVALUATION OF SURGICAL TREATMENT

In an attempt to evaluate the results of the treatment of essential hypertension by surgical means a few of the many reports have been selected to emphasize different points in the development of the philosophy of surgical treatment.

Peet,[9] in discussing the supradiaphragmatic type of operation, has emphasized the renal humoral theory of causation of arterial hypertension, expressing the belief that in most cases the primary renal ischemia is of neurogenic origin. His criteria for operation are: age below 54 years, systolic pressure consistently over 170 and diastolic pressure over 105 in a sitting position, both expressed in millimeters of mercury, a value for nonprotein nitrogen below 45 mg. per hundred cubic centimeters of blood, well compensated heart and relatively normal cerebral function, exception generally being made because of incapacitating symptoms such as excruciating headaches or evidence of otherwise hopelessly malignant hypertension. He has reported on bilateral supradiaphragmatic splanchnicectomy in over 1,500 patients, most of them followed one to twelve years, and he has stated that five to twelve years after operation 81.3 per cent of those patients still alive had had a significant drop in both systolic and diastolic pressures. Life expectancy had improved in 19 per cent of those with preoperative malignant hypertension who were still alive five to thirteen years after operation, compared with less than 1 per cent in the Keith, Wagener and Barker[4] series.

Poppen and Lemmon[10] reported on 100 consecutive cases of thoracolumbar sympathectomy performed for hypertension that had existed for one and a half to four years. They stated that, for patients below the age of 50 years who have progressive essential hypertension or patients of any age and sex whose clinical tests indicate probably fair or good results, operation is indicated. The actual age range of their patients was 15 to 54 years, and there were 42 men and 58 women. They found that contraindications to surgical treatment included cardiac or renal failure and severe retinal arteriosclerosis with fixed high blood pressure. The patient with early and slight hypertension was not operated on. They stated definitely that there was no valid method for selecting patients for sympathectomy; the clinical and laboratory tests were of greater help in predicting the probably poor results than in indicating the probably favorable results. Symptomatic relief was found to occur even if blood pressure was not reduced. When blood pressure was reduced, beneficial results occurred. In their series of 100 cases they found good results in 47 per cent, fair in 24 per cent and unsatisfactory in 22 per cent. There was a mortality rate of 7 per cent, 1 patient dying of coronary occlusion two days after the second stage procedure and 6 dying soon after leaving the hospital. It was interesting to note that normal ejaculation occurred in 41 per cent of the male patients. That the power of ejaculation is predominantly controlled by either the first or second lumbar ganglion is not substantiated in their series. Of the women, 2 had completed pregnancies without significant changes in the postoperative blood pressure. In 6 cases sympathectomy was added to nephrectomy because of unilateral renal disease.

Palmer,[11] reporting on a series from the Massachusetts General Hospital, stated that 12 per cent of 74 hypertensive patients subjected to supradiaphragmatic sympathectomy in the five years before 1940 had a fall of blood pressure to 150 systolic and 110 diastolic or less. Addition of lumbar sympathectomy to the procedure benefited even the patients with severe grades of hypertension as the earlier operation had not. By 1943, 37.6 per cent of 101 patients on whom sympathectomy from the ninth thoracic to the second lumbar vertebra had been done had a lowered blood pressure that had been maintained one to four years. Comparison with a group of 100 patients treated with a medical regimen including potassium thiocyanate therapy clearly demonstrated the benefit of surgical treatment. About 30 per cent of all patients treated by sympathectomy had died, 45 per cent had remained hypertensive and 25 per cent had normal or nearly normal pressure. In only about 12 per cent of the medically treated patients had the blood pressure fallen to normal or near normal, and the mortality rate was about the same as that for the surgically treated patients.

Palmer also stated that there were no positive tests or categories by which results could be accurately predicted for an individual patient. In general, young patients, under 40 years, especially women with less organic change, who have spontaneous fall of the pressure to normal levels as a result of rest in bed and

9. Peet, M. M.: Results of Bilateral Supradiaphragmatic Splanchnicectomy for Arterial Hypertension, New England J. Med. **236**: 270-277 (Feb. 20) 1947.

10. Poppen, J. L., and Lemmon, C.: The Surgical Treatment of Essential Hypertension, J. A. M. A. **134**: 1-9 (May 3) 1947.

11. Palmer, R. S.: Medical Evaluation of the Surgical Treatment of Hypertension, J. A. M. A. **134**: 9-14 (May 3) 1947.

sedation, obtain the best results. There was a diminishing return of favorable results associated with a longer period of follow-up. The recommendation from the report was that sympathectomy was regarded as the treatment of choice for malignant hypertension and should be offered to patients with early to moderate vasospastic hypertension and without clinical evidence of irreversible arteriolar disease.

Rogers and Palmer [12] discussed the medical and surgical treatment of hypertension and stated that treatment should consist first of medical measures, with rest in bed and sedatives and, for those without renal failure, a high-protein, low-cholesterol diet. A salt-poor diet and a rice diet were tried. A fall in blood pressure often followed institution of the medical regimen by a few weeks to a few months, but the pressure rarely remained normal. Sodium sulfocyanate was given to selected patients after the initial period, and results of medical therapy indicated that symptomatic relief could be produced in 90 per cent of patients with slight and in 75 per cent of patients with moderate hypertension. Of their series of 68 patients followed for more than three years after dorsolumbar sympathectomy, 25 per cent had normal blood pressure, 30 per cent were dead and 45 per cent showed no improvement from preoperative condition.

In view of the fact that because of the low mortality and low morbidity rates associated with it there had been some discussion with regard to the subdiaphragmatic operation in certain cases of hypertension, a series of cases which had been reported on by Allen and Adson [13] ten years previously was reviewed. They discussed the indication for the operation and the results, which at that time were divided into good 24 per cent, fair 28 per cent, temporary 28 per cent and failure 20 per cent. The same patients were asked for reports from themselves and their physicians, in order that the subjective as well as the objective reactions to operation could be checked. It had become apparent in all the reviews of cases made by us at the clinic that the blood pressure readings alone did not represent the results of operation, especially after ten or more years.

The original 124 patients were followed up either by means of a review of reports contained in the case records, as some of them had returned for examination or had died in the interval, or by means of letters. Of the original 124 patients, 110 could be traced and reported on. Of these 110 patients, 20 were living and working without symptoms and had a blood pressure below 150 systolic and 100 diastolic. Of these 20 patients, 13 were women and 7 were men; 15 were in group 2 at the time of operation, 2 were in group 3 and 3 were in group 1.

Of the 110 traced patients, 27 were working every day and were symptom free, with blood pressures of over 150 systolic and 100 diastolic. Of these 27 patients, 25 were women and 2 were men; 5 of the 27 were in group 1, 15 were in group 2 and 7 were in group 3.

Of the 110 traced patients, 33 had died; of these 33, 21 had lived seven or more years after operation. There were 30 living patients who were incapacitated and not working.

12. Rogers, W. F., and Palmer, R. S.: Essential Hypertension: Prognosis and Comparison of Medical and Surgical Treatments, Am. Pract. **1**: 459-465 (May) 1947.

13. Allen, E. V., and Adson, A. W.: Physiologic Effects of Extensive Sympathectomy for Essential Hypertension: Further Observations, Ann. Int. Med. **11**: 2151-2171 (June) 1938.

The striking factor in this review was the number of patients who were contributing members of society, happy and symptom free, whose blood pressure readings would imply a failure but who themselves were confident that the turning point in their previous illness was the operation. Palliation had been prolonged.

In attempting to evaluate the surgical treatment of hypertension it seemed to us that a more nearly true estimate could be made if the physicians who had undergone both the subdiaphragmatic and the thoracolumbar type of operation were allowed to speak. For that reason we at the clinic reviewed our series of 31 and found that 24 of them had undergone the subdiaphragmatic type of procedure five to ten years previously, while 7 had undergone the thoracolumbar operation two years previously. Of the 24, 5 had died in from five to ten years after operation and 6 could not be located.

It was interesting to note that of the 13 known living physicians who had undergone the subdiaphragmatic

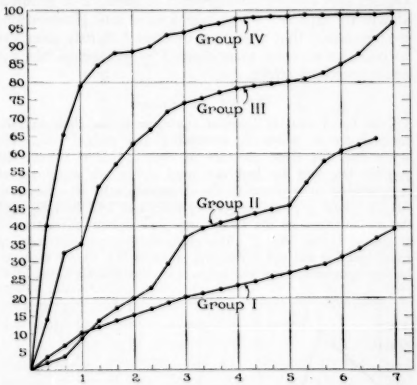

Fig. 1.—Grouping of hypertension, with representation of progress and mortality rate. The horizontal row of figures shows the years after first examination; the vertical column of figures shows the percentage of mortality.

type of operation, 6 had blood pressure readings that were below 150 systolic and 100 diastolic and all were symptom free. The other 7 had blood pressure readings that were above 150 systolic and 100 diastolic, but 4 of these were symptom free and were working every day while 3 were incapacitated. Personal letters from these physicians, with few exceptions, were sincere in their appreciation for the relief after operation. Many made the point that postoperatively they were improved, and, if the blood pressure tended to return to previous levels or if symptoms reappeared, they found that the medication which had failed before operation showed gratifying results.

In the group of 7 physicians who had had the thoracolumbar operation there were no deaths; 6 were asymptomatic, with blood pressure readings that were within normal limits, while for 1 treatment has been classified as having failed since the patient retained his symptoms and hypertension.

In order to compare the results of medical treatment with those following infradiaphragmatic and thoraco-

lumbar sympathectomy and splanchnic resection, a graph was prepared which illustrates the figures compiled by Wagener and Keith.[3] It has seemed to us at the clinic that any improvement in the prognosis for the different groups as outlined should be accepted as evidence of the accomplishment of surgical treatment (fig. 1).

In a review of 130 cases in which operation had been performed it was found that some of the patients had maintained fairly moderate hypertension over a period of years which suddenly increased in severity both as to blood pressure readings and symptoms. After thoracolumbar sympathectomy the symptoms were relieved and the fundus changes as well as the blood pressure readings either indicated a lower grouping for the patient or a return of the blood pressure to normal. This would seem a reliable and constant criterion for the evaluation of surgical results. It has been proved that some patients suffering from hypertension may continue for years in the same group. Others may change from group 1 to group 2 or group 3, slowly or rapidly. From our figures and observations it is apparent that operation instituted shortly after the increase in severity as evidenced by groupings has the most beneficial effect.

REPORT OF CASES

Case 1.—A man 44 years of age came to the clinic in 1946 complaining of headache, irritability and sternal pain. He stated that his blood pressure in 1941 had been around 180 systolic but that he had not been aware of symptoms of hypertension until recently. On examination he was found to have a blood pressure of 210 systolic and 140 diastolic, and the examination of the fundus revealed lesions characteristic of group 2 plus (fig. 2). His electrocardiogram and tests of renal function did not reveal any abnormality. After thoracolumbar sympathectomy and splanchnic resection his blood pressure dropped to normal, and his fundi became normal and at the time of writing had remained so for two years. He was a radio announcer and worked every day. He had lost his irritability, headaches and all other symptoms.

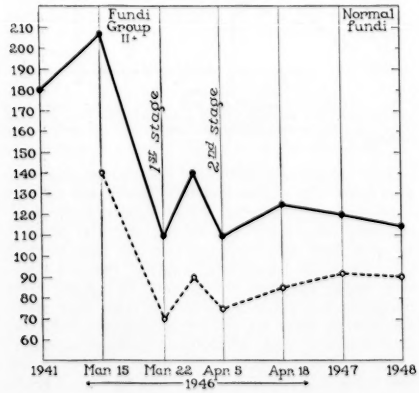

Fig. 2.—Progress of the man, 44 years old, in case 1. Ocular fundi and blood pressure were normal two years after thoracolumbar sympathectomy and splanchnic resection. The vertical column of figures shows the blood pressure.

Case 2.—A man aged 40 years came to the clinic stating that he had been aware of high blood pressure for two years; at the time of admission the systolic blood pressure was 190 and the diastolic pressure 110 (fig. 3). He had been examined one year before, and his blood pressure was found to be 180 systolic and 130 diastolic, with fundi of group 1. He was given thiocyanates, and his symptoms were temporarily relieved. When examined later his fundi was found to be characteristic of those of group 3, although his blood pressure readings did not differ from previous readings. His symptoms had increased. After thoracolumbar sympathectomy his blood pressure and fundi returned to normal and have remained so for two years. His postural hypotension persisted for almost a year and then became less evident and disappeared. He operated a business which required a stable emotional and physical makeup and was completely relieved of all symptoms.

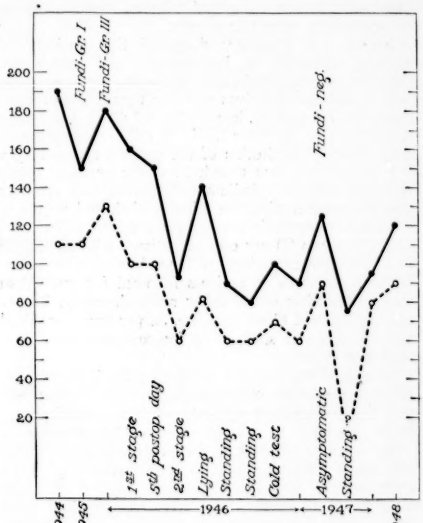

Fig. 3.—Progress of the man, 40 years old, in case 2. Blood pressure and ocular fundi were normal two years after operation was carried out because of sudden increase in severity of hypertension and rapid shift of the hypertension from group 1 to group 3. The vertical column of figures shows the blood pressure.

My co-workers and I also observed some patients whose blood pressure and fundi did not return to normal, but the pressure decreased and continued at a persistently lower level and the fundi improved so that a lower grouping characterized the hypertension for a period of two years. The progress of the disease had been arrested and the prognosis altered.

Case. 3.—A man aged 34 years was operated on because of severe symptoms and evidence of progression of his hypertension. Six years before, he had been refused life insurance because his blood pressure had been found to be elevated to 150 systolic and 100 diastolic without symptoms. During the following years tests with sodium isoamylethylbarbiturate (sodium amytal®) revealed the blood pressure to be labile. After five years examination of the fundi revealed group 1 hypertension; there were few symptoms. In succeeding years his symptoms became gradually more severe, the blood pressure increased to 220 systolic and 160 diastolic and the appearance of his fundi was characteristic of group 3 hypertension. Thoracolumbar sympathectomy was done, and his symptoms were relieved; his blood pressure dropped to 140 systolic and 90 diastolic, and his fundi improved so that his condition could

be classified as group 1 hypertension. At the time of writing the patient's condition had remained the same for two years (fig. 4). The figure also illustrates the results of a postoperative sweating test, which reveal the amount of denervation accomplished.

It has been our impression that unless complete denervation is demonstrated, follow-up studies are valueless. For that reason preoperative and postoperative temperature studies of the extremities and postoperative sweating tests are made on all patients.

The question of the occurrence of pregnancy after sympathetic denervation has caused considerable concern among the obstetricians. Numerous reports have been made in which normal pregnancies have been accomplished after extensive sympathectomy. Some pregnancies have had to be interrupted and cesarean section has had to be carried out. However, cases have been reported in the literature and we have had several in which the operation was done after conception in patients who, for definite reasons, refused therapeutic abortion. These patients have gone through pregnancy without elevation of blood pressure and have completed normal delivery. Sympathectomy does offer these patients a possible solution to their problem.

CASE 4.—A married woman aged 31 was seen about the second month of her pregnancy. She had been observed at the clinic for ten years, during which time it was known she had an elevated blood pressure, but the fundi were normal and there were no symptoms. Her pressure continued to be labile although elevated, and group 1 changes gradually developed in the fundi (fig. 5). She continued to remain symptomless, but the blood pressure became more nearly fixed. She then married, but was warned that pregnancy might be dangerous. When she reported that she was pregnant, it was found that there was minimal but positive damage to the kidneys and some enlargement of the cardiac shadow—just enough evidence of progression to alarm the obstetricians. Thoracolumbar sympathectomy was performed late in 1946, and there was a definite reduction in blood pressure until the abdomen began to enlarge. She went through a normal delivery, and her subsequent blood pressure returned to that of ten years previously; it was elevated but not alarming.

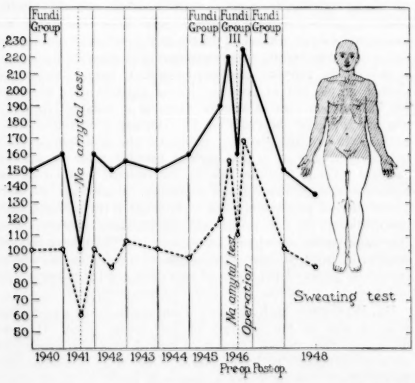

Fig. 4.—Progress of the man, 34 years old, in case 3. This patient's group 1 hypertension had been maintained for five years, at the end of which it shifted suddenly to group 3. After thoracolumbar sympathectomy the patient's hypertension returned to group 1 and remained in that group for two years after the operation. A diagrammatic representation of the loss of sweating in this case appears at the right. The vertical column of figures at the left shows the blood pressure.

COMMENT

Essential hypertension of obscure causation should be looked on as a progressive serious disease requiring careful observation and treatment. The treatment should be instituted in the early stages and should be classified as expectant, physiologic and palliative.

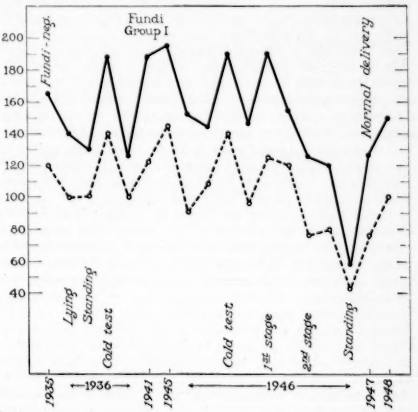

Fig. 5.—Progress of the woman, 31 years old, in case 4. Late in 1946, early in this patient's pregnancy, operative intervention was employed; delivery was normal. Blood pressure remained elevated but not alarming. The vertical column of figures shows the blood pressure.

Expectant treatment should consist of determining whether the patient is a hyperreactor and has early hypertension, of instruction as to the harmful effects of nicotine and emotional stress and of education in the proper methods of living.

The physiologic treatment comprises both medical and surgical measures and is indicated in the early stages of the disease before irreversible changes have taken place in the vascular and organic tissues of the body. This type of therapy is instituted to arrest the progress of the disease. The medical treatment consists of diets and treatment with drugs. The surgical treatment consists of operations on the sympathetic nervous system to relieve vasomotor spasm of the vessels of the splanchnic region, abdomen and lower extremities.

Palliative treatment consists primarily of surgical measures. Its objective is to relieve the incapacitating symptoms of the later stage of the disease without arresting the progress of the condition or lowering the blood pressure.

From observations at the Mayo Clinic it would seem that less radical operations might be followed by more permanent results if instituted earlier in the course of the disease. If the less radical operations are not entirely successful or if the results prove temporary, the more radical procedures can then be done.

Instead of an attempt to evaluate surgical results by classification of the condition of the patients postoperatively, it would seem that a more rational basis would be the assigning of the hypertension of a patient to the correct individual group preoperatively. This, together with the prognoses associated with the several groups of hypertension, would form a background for evaluation.

ABSTRACT OF DISCUSSION

DR. GEZA DE TAKATS, Chicago: This highly significant contribution by Dr. Craig illustrates the following points which need emphasis: 1. The earlier the stage of hypertension, the more favorable the result. 2. The later stages of the disease require more extensive sympathectomies. If one compares the original report of Adson and Allen, made in 1933, on the same material with the one made ten years later, one can see that the results have held up surprisingly well. This is an excellent performance. My experience with over 400 splanchnicectomies since 1940, with a transdiaphragmatic approach, would indicate that a minimal sympathectomy should certainly include the lower three thoracic and upper two lumbar ganglions. It has also been my procedure to do a more extensive extrapleural resection in cases of advanced disease, with the dorsal chain taken from the third or fourth dorsal ganglion. My co-workers and I did not believe, however, in our last year's report on the subject (The Surgical Treatment of Hypertension IV, Selection of Cases and Surgical Technique as Influencing Results—*Surgery* **24**:469, 1948) that extension of the operation to higher levels including the cardiac accelerators is particularly desirable, nor is the slowing of the cardiac rate on exercise of any obvious benefit. Far more important than the extension of the resection to higher and higher levels is the preoperative study of hypertensive persons directed mainly toward two main objectives: (1) the determination of the irreversible organic damage, particular attention being directed to renal function, and (2) the estimation of the different factors producing hypertension as shown in the diagram. Of these factors the psychic factor and the corticoadrenal factor have seemed to be of particular significance. We have come to believe that a technically incomplete operation, done in the suitable case, is far more successful than a subtotal or total sympathectomy in the poorly selected case. By "poorly selected case" I do not necessarily imply advanced organic damage, since cardiac damage is surprisingly reversible and so is cerebral and retinal damage. Peripheral vascular and renal damage are far more difficult to influence, and their preoperative study is important. Atheromatous hypertension with a rigid aorta, high pulse pressure and comparatively low diastolic pressure, does not indicate surgical treatment, nor does fixed renovascular sclerosis. I most emphatically agree with Dr. Craig that the operation is not directed toward any set percental drop in blood pressure, but is a treatment of progressive cardiovascular renal disease.

DR. JAMES L. POPPEN, Boston: I am certain that Dr. Craig and Dr. de Takats will agree with me that the problem of hypertension is to a great degree that of the internist, physiologist, pharmacologist and pathologist. The surgeons, however (and I mean Dr. Craig, Dr. Adson, Dr. Peet and, more recently, Dr. Smithwick), have been instrumental in stimulating interest in this serious disease by demonstrating that surgical intervention is of material aid in certain patients with hypertension. They have demonstrated this fact by careful analysis of patients before, during and after operation, so that certain phases of hypertension have become clearer. This has stimulated internists and others to institute studies that are bound to be fruitful in the treatment of hypertension. I have no major objections to Dr. Craig's deductions, with the exception of the extent of sympathectomy. This holds true also for Dr. de Takats. The less radical operation in cases of early disease is a fallacy, since the capacity of regeneration of the sympathetic nervous system is rapid in most patients. It is true that regeneration may take place more rapidly in certain patients than in others. Why, I do not know. It may be due to scar tissue. Less radical operations may allow for by-pass. I hesitate to subject a patient to a second operation if it seems at all possible to prevent it, because I know from experience how difficult it is to perform a thorough sympathectomy on a person who has previously had a sympathectomy. Also, to subject the patient to further postoperative neuralgias, even though temporary, does not appeal to me. The reason for my objection to less radical operations is the fact that on the basis of comparative studies made by Evans and others on 270 patients in whom the sympathetic nerves were removed from the fourth thoracic to the second lumbar ganglions, inclusive, the results were striking. These were compared with results of studies made by Dr. Lemmon and myself on 100 patients in whom various sections of the sympathetic system had been removed. The increase in satisfactory results was striking. I operated on all of the patients, with the exception of a few of the more recent patients who were operated on by Dr. Livingston. In the first series, 47 per cent obtained good results. In the second series, 63 per cent obtained good results. There were 24 per cent with fair results in the first series and 24 per cent with fair results in the second. However, there were 24 with poor results in the first series and 13 per cent poor results in the second. I disagree that the operative mortality is increased by more extensive operation. It stayed exactly the same in the two groups, being 0.5 per cent, or 1 per cent mortality. I do think that it is important to reiterate that many feel that patients will become sterile. Sterility occurred in only 40 per cent of cases; 60 per cent did not become sterile.

DR. FREDERICK M. ALLEN, New York: I am thankful that no patient of mine has undergone operation. Elsewhere (*New York State J. Med.* **48**:1306, 1948) I have criticized medical oligarchy. One manifestation may be the monopolization of medical academy and national society programs by academic representatives who know all about saltless diet from observations of a few patients for a few months. I have never qualified for any paper or discussion or symposium, because I merely originated the treatment and have employed a diet in only a few thousand cases in twenty-eight years. Kempner's more recent results are identical with mine and confirm the decided early benefits. Certainly the four year death rate is far below the old statistics. I recognize a group of seemingly refractory cases. I have no experience for judging any possible symptomatic benefits from artificial reduction of pressure in such cases. But I am the only one having experience to show that the seemingly refractory cases are often not refractory when observed for years. Even with high pressures the average progress of the patients is extraordinarily good, and the former progressive tendency is halted or somewhat reversed. Diet should be used even for surgically treated patients. Salt restriction has more than symptomatic effects. I first showed that the opposite state, namely, the profund vascular atony of shock, specifically requires salt solution, not the plasma which is still extensively misused. Selye links shock with the causation of hypertension. I emphasize my clinical proofs that salt restriction arrests progressiveness and prevents such consequences as retinitis, angina, congestive heart failure and uremia. I am not in favor of letting patients drag along in the anticipation that in selected cases at a suitable late stage one may mitigate the condition by crippling a nervous mechanism. I cannot too strongly emphasize the principle of one's beginning treatment at the earliest possible stage to prevent the late stages. I affirm this as the rational solution of the huge problem of hypertensive mortality. I welcome the surgeons' talk of prophylaxis, but I challenge them for prolonged observations of the preeminent prophylaxis, namely, diet. Agreeable menus as advised in my manual (1925) have secured fidelity. I urge at least comparison of results for a similar number of years of the series of surgically treated patients with other series of patients for whom diet was employed.

DR. WINCHELL MCK. CRAIG: I am reminded of an occasion when I was on the program of Dr. Irving Page. He was discussing the medical treatment and I was discussing the surgical treatment of hypertension. One of his remarks was to the effect that some day a discovery would be made which would cure hypertension without operation. My reply to that was that those of us who are now operating for hypertension would welcome that day. The treatment of hypertension today is a challenge to the entire medical profession, not to surgeons alone but to internists and to physiologists. When we have something better to offer than surgical treatment, we will consider it, but until such time I think that we all agree that we must continue to treat the patient with the means at our disposal to obtain relief of symptoms and retard the progress of the disease. At a recent meeting of the American College of Physicians I took part in a symposium on the treatment of

hypertension, and the consensus was that the medical treatment of hypertension is successful in some cases but that those who do not respond to medical treatment should be considered for operation and that there are certain patients who benefit more from medical treatment after they have had surgical treatment. The treatment of hypertension today is still controversial, and one must keep an open mind as to the most efficacious methods of treatment. At present there seems to be no one treatment which is a solution to the problem. Salt-free, low-sodium and rice diets and new drugs, which have been or may be developed, may alter the progress of the disease, and I am sure that surgeons would not insist on operative measures if other treatments proved superior. I appreciate the discussion of Dr. de Takats, Dr. Poppen and Dr. Allen, but I would like to leave with you the idea that it behooves us all to maintain an open mind with regard to the treatment of hypertension. Some day it may not be necessary to operate for the relief of hypertension, as physiologists, internists and surgeons all agree that a physiologic mechanism is involved in the causation of hypertension which, if found, may clarify our problem.

INDICATIONS FOR REMOVAL OF NONTOXIC NODULAR GOITERS

GEORGE CRILE Jr., M.D.
and
W. S. DEMPSEY, M.D.
Cleveland

In recent years the widespread publicity given to the subjects of cancer detection and prevention, the emphasis on periodic physical examinations and the development of cancer detection centers has resulted in an increased cancer consciousness in the population at large and in the medical profession. Therefore, physicians are being consulted oftener regarding the potential malignancy of benign lesions. Notable among these are nontoxic nodular goiters.

Few physicians would deny that firm discrete adenomas of the thyroid should be removed. The controversial question is whether to advise removal of soft nontoxic nodular enlargements of the thyroid. Many of these goiters are not enlarging or causing symptoms, and the patients often are unaware of their presence until they are found on a routine physical examination.

EXPLANATION OF THE HIGH REPORTED INCIDENCE OF CARCINOMA OF THE THYROID

There is a discrepancy between the high incidence of cancer of the thyroid [1] encountered by surgeons and the low incidence of fatal cancer of the thyroid reported in vital statistics.[2] Although surgeons often state that 5 to 10 per cent of nontoxic nodular goiters are malignant, this does not reflect the true incidence of cancer of the thyroid in this condition.[3] The incidence of malignancy, as observed by the surgeon, is high because he is dealing with the selected group of nontoxic nodular goiters that are subjected to thyroidectomy.

The patients who come to the surgeon have been carefully screened, first by the patient himself, who does not often consult a doctor unless the nodule is giving evidence of growth or functional activity; second by the family physicians or internist who detects the obvious benign quality of soft poorly defined involutionary nodules in the thyroid and hesitates to advise operation, and finally by the surgeon himself, who recognizes the innocuousness of small soft multinodular goiters, reassures the patient and discourages operation. Therefore, the fact that the surgical pathologist finds 8 per cent of nontoxic nodular goiters malignant merely means that this proportion of suspicious adenomas was proved to be cancerous. In the millions of nontoxic, symptomless and innocuous goiters which never are removed, the incidence of carcinoma is so low that vital statistics rate cancer of the thyroid sixteenth in the list of organs affected by malignant disease.[4]

Another cause for the discrepancy between the surgeons' and the internists' statistics is the confusion as to what constitutes a carcinoma of the thyroid. For example, some small carcinomas of the thyroid may exist for many years without enlarging or causing serious symptoms.[5] Such tumors may escape detection because the thyroid is not examined routinely in all autopsies. This may explain the difference between the incidence of carcinoma of the thyroid as reported by the surgical pathologist and that observed by the pathologist who confines his work to postmortem examinations and who does not examine the thyroid unless there are special indications.

A third cause of variation between the surgeon's statistics and those of the internist is the method of presentation of facts. An erroneous impression as to the frequency of carcinoma of the thyroid in solitary nodules may be conveyed by inclusion in the statistics of all frank carcinomas of the thyroid, even when the clinical diagnosis is clear and when widespread metastasis is present. This is as misleading as it would be to include all ulcerating carcinomas, regardless of size, infiltration or metastasis, in a survey of the malignant potentialities of benign gastric ulcer, and to exclude from this survey all gastric ulcers which healed under medical treatment and were not resected. The clinical carcinomas have been added to the total, and the obvious benign lesions that were not operated on have been subtracted from the total, with the result that the figures, although accurate, create a false impression.

PRESENTATION OF MATERIAL

As an indication of how the presentation of material may influence the statistical conclusion, we have analyzed our experience with carcinoma of the thyroid.

In a series of 768 thyroidectomies thirty malignant tumors were found, an incidence of 3.9 per cent. During this same period five inoperable malignant conditions of the thyroid were encountered, three of which have been excluded from this study because the clinical diagnosis was not confirmed by biopsy. The incidence of malignant tumors in all nodular goiters (with and without hyperthyroidism) was 5.6 per cent (table 1). Ten and nine-tenths per cent of nontoxic goiters were malignant, as well as 24.5 per cent of the solitary tumors.

A definite diagnosis of malignancy was made preoperatively in 27 of the 30 patients with confirmed

From the Cleveland Clinic and the Frank E. Bunts Educational Institute.

Read before the Section on Surgery, General and Abdominal, at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 24, 1948.

1. Cole, W. H.; Slaughter, D. F., and Rossiter, L. J.: Potential Dangers of Nontoxic Nodular Goiter, J. A. M. A. **127**: 883-888 (April 7) 1945.

2. Rogers, W. F.; Asper, S. P., Jr., and Williams, R. H.: Clinical Significance of Malignant Lesions of Thyroid Gland, New England J. Med. **237**: 569-576 (Oct. 16) 1947.

3. Hinton, J. W., and Lord, J. W., Jr.: Is Surgery Indicated in All Cases of Nodular Goiter, Toxic and Nontoxic? J. A. M. A. **129**: 605-606 (Oct. 27) 1945.

4. Pack, G. T., and Livingston, E. M.: Treatment of Cancer and Allied Diseases, New York, Paul B. Hoeber, Inc., 1940.

5. Crile, G., Jr.: Papillary Carcinoma of Thyroid and Lateral Cervical Region: So-Called "Lateral Aberrant Thyroid," Surg., Gynec. & Obst. **85**: 757-766 (Dec.) 1947.

malignancy of the thyroid. In 2 more cases the diagnosis of malignancy was suspected but not favored. In only 1 case was malignancy not diagnosed or suspected preoperatively (table 1). In this case a nodule was removed because of its hardness and proved to be a papillary carcinoma.

These data lend themselves to several forms of misleading deductions. It can be shown, for example, that carcinoma of the thyroid is commonly present in apparently innocent solitary adenomas. Three of 30 proved carcinomas occurring in 98 solitary nodules of the thyroid were not definitely diagnosed before operation. It would be correct to state that over 3 per cent of the solitary nodules that we have removed proved to be carcinomas undiagnosed before operation. On the basis

TABLE 1.—*Incidence of Malignancy in Nodular Goiter (1937-1946)*

	Incidence of Malignancy
I. In 537 nodular goiters (toxic, nontoxic, benign and malignant) 30 malignant tumors were present	5.6%
A. In 263 nodular goiters with hyperthyroidism no malignancy was present	0.0%
B. In 474 nodular goiters without hyperthyroidism 30 malignant growths were present	10.9%
1. Of 176 multinodular goiters, 6 were malignant	3.4%
2. Of 98 solitary tumors, 24 were malignant	24.5%

TABLE 2.—*Accuracy of Preoperative Diagnosis of Malignancy in 537 Nodular Goiters*

98 solitary tumors without hyperthyroidism	24 malignant growths	21 definitely diagnosed preoperatively
		2 suspected but not diagnosed preoperatively
		1 not suspected or diagnosed preoperatively
	74 benign tumors	61 diagnosed as benign
		13 suspected of being malignant but proved benign
		0 diagnosed as malignant but proved benign
176 multinodular goiters without hyperthyroidism	6 malignant growths	6 definitely diagnosed preoperatively
		0 suspected but not diagnosed preoperatively
		0 not suspected or diagnosed preoperatively
	170 benign tumors	164 diagnosed as benign
		6 suspected of being malignant but proved benign
		0 diagnosed as malignant
263 nodular goiters with hyperthyroidism	0 malignant growths	
	263 benign tumors	262 diagnosed as benign
		1 suspected of being malignant but proved benign
		0 diagnosed as malignant

of these statistics a patient with a solitary nodule in the thyroid could be informed that there was one chance in thirty that the tumor was malignant, even though there was no clinical evidence of cancer.

Approaching the subject from a different angle, it can be proved unlikely that a solitary nodule contains an unsuspected carcinoma. Although the diagnosis was not made before operation in 3 of the 98 cases, it was suspected in all but 1. Hence it would be correct to say that unsuspected carcinoma was found in only 1 per cent of the solitary nodules of the thyroid (table 2).

To estimate the true incidence of carcinoma of the thyroid it is necessary to know how many patients with solitary nodules were observed at the Cleveland Clinic during the same period. Analysis of the charts of 500 consecutive patients, excluding those who entered with the complaint of thyroid disease, or in whom operations on the thyroid were advised or performed, indicates that approximately 4 per cent had symptomless nodular goiters. These were incidental observations of the physical examination. Of those with nodular goiters about 25 per cent appeared to have solitary nodules. By projecting this experience over the period of observation, approximately 1,237 patients with solitary nodules of the thyroid probably have been examined and advised against having the goiter removed. It is impossible to state how many, if any, of these nodules subsequently proved to be malignant. However, we have not yet encountered a carcinoma of the thyroid in any of these patients. The claim might be made, therefore, that the incidence of unsuspected carcinoma of the thyroid in innocuous-appearing solitary adenomas is 1 in 1,335 (1,237 not operated on plus 98 operated on). This is a fallacious line of reasoning because there is no proof that ultimately some carcinomas will not appear.

Most of the carcinomas which are not suspected or diagnosed before operation are of the slowly growing, highly differentiated type. Since most of these are curable even after they have been present for years, and most of the undifferentiated carcinomas are incurable regardless of how early they are removed, it is not likely that earlier recognition and removal of carcinomas would alter the ultimate prognosis in more than 1 case in 5. Thus, if we were to institute a policy of removing all solitary adenomas of the thyroid regardless of history, size or consistency, we should have to remove 6,675 (5 times 1,335 total patients with solitary nodules) solitary adenomas to prevent 1 patient from dying of cancer. Regardless of the safety of thyroidectomy, it is doubtful whether 6,675 goiters could be removed without more than 1 postoperative death. This does not take into account the morbidity from technical accidents or the economic aspects of operation performed on such a scale.

Such deductions as these, which are based on statistical surveys of unfollowed cases, are clearly misleading. Conclusions regarding the innocuousness of nodular goiters based on reasoning such as this are as mistaken as would be the opposite if based only on selected surgical cases. Until we know more accurately how often benign adenomas become malignant it would seem wise to base indications for thyroidectomy on clinical judgment rather than on statistical surveys of selected or unfollowed cases.

COMMENT

Surgeons realize that conservative treatment of adenomatous goiters is frequently unwise. Often a patient with a hard enlarging tumor of the thyroid has been reassured by a physician, given a little iodine and advised to disregard the goiter. Such tumors are often malignant, and delay in treatment may prevent cure. These occasional errors have encouraged an overstatement of dangers of carcinoma of the thyroid in nodular goiter. Surgeons who suggest that all nodular enlargements of the thyroid should be removed regardless of history, physical observations or the apparent benign quality of the involutionary nodules are conscientiously attempting to give their patients maximum protection against carcinoma. However, indiscriminate thyroidectomy, performed on every one with nodular goiter, probably would entail a morbidity and mortality quite out of proportion to the number of cases of fatal cancer that it might prevent.

An enlarging adenoma of the thyroid, an adenoma which is firm and of different consistency from the rest

of the gland or one which is giving pressure sensations denoting growth should not be disregarded. Conspicuous adenomas should be removed for cosmetic reasons. All adenomas in children must be regarded with grave suspicion, as must discrete adenomas in adults, regardless of age. However, small soft nodular enlargements which have been examined and considered innocuous by a physician thoroughly familiar with diseases of the thyroid may be disregarded. Removal of such goiters is not justified and is comparable to indiscriminate removal of uteri and breasts for minimal benign lesions.

The physician who has not had considerable experience may have difficulty in recognizing the possible malignancy of a tumor of the thyroid. For this reason it is urged that the decision relative to removal of a tumor of the thyroid should be made by a physician or surgeon particularly qualified by experience and training.

Carcinoma of the thyroid is not necessarily a disease of old age. Since the tumors appear before the age of 20 in about one fourth of the patients with papillary carcinoma, and since the average age of patients with papillary carcinomas and lateral cervical metastasis is only 31.9 years, it is important to remember that a tumor of the thyroid in a child is more apt to be malignant than in a woman of 70. Carcinoma is almost as common in young adults as it is in older persons.

The presence of carcinoma cannot be excluded merely because the tumor has remained the same size. A tumor which has already metastasized to many cervical nodes may not enlarge for years and may never metastasize from the neck. For more than twenty years we have observed a patient with proved metastasis from a papillary carcinoma of the thyroid who has refused all treatment. The nodules in the thyroid and lateral cervical region are only a little larger than when they first appeared twenty-seven years ago.

Most malignant tumors of the thyroid are hard, or at least firm, and usually are of a different consistency than the nontumorous thyroid. The firmness and discreteness of the tumor is the most reliable indication in establishing suspicion of carcinoma of the thyroid.

Although the incidence of carcinoma is higher in nodular goiters, it is difficult to prove that carcinomas have their origin in benign adenomas. It is reasonable to suppose that many, if not most, carcinomas of the thyroid are carcinomas from the beginning and arise from the parenchyma of the thyroid as do benign adenomas. There is little proof that a benign tumor of the thyroid becomes malignant oftener than the goitrous thyroid parenchyma.

Since we cannot prove that carcinomas of the thyroid often arise within the substance of a benign adenoma, and since the incidence of carcinoma of the thyroid is so low, even in areas in which endemic goiter is prevalent, there is little possibility that a given adenoma of the thyroid will become malignant. The pertinent concern is whether or not the adenoma is cancerous at the time of examination. There is probably less chance that a benign adenoma will become malignant at some future date than that carcinoma will develop in the apparently normal uterus or breast.[6]

6. Fatal carcinoma of the breast is more than thirty times as common as fatal carcinoma of the thyroid (Incidence of Cancer, American Cancer Society, 1949). Carcinoma of the thyroid is only about seven times as common in areas of endemic goiters as it is in nongoitrous areas (Ward, R.: Malignant Goiter; Survey of Geographical Types, West. J. Surg. **43**: 494-504 [Sept.] 1935). In the goitrous thyroid, therefore, carcinoma does not develop as frequently as in the apparently normal breast.

The conventional subtotal thyroidectomy performed "prophylactically" for nontoxic nodular goiter does not give more than partial protection against the subsequent development of carcinoma in the remnants of the gland. A rapidly growing and fatal carcinoma of the thyroid has been observed to develop in a patient who had undergone "prophylactic" thyroidectomy thirty years before.

No surgeon would willingly subject a patient with a presumably benign goiter to the certainty of myxedema and the risk of tetany, which are involved in a total ablation of the thyroid. Remnants of the thyroid tissue remain after "prophylactic" subtotal thyroidectomy, and since these remnants have been subjected to the same pathologic stimulation that originally caused the development of the adenoma, a further development of adenomas or carcinomas is always possible. Moreover, a malignant tumor may be overlooked and left in the remnants of the thyroid. We have removed a papillary carcinoma of the thyroid less than a year after a "prophylactic" thyroidectomy had been performed for adenomatous goiter without hyperthyroidism. Neither surgeon nor pathologist discovered the carcinoma at the first operation, although we feel certain that it must have been there at that time.

Thyroidectomy for nodular goiter should be accomplished in such a way as to remove completely any carcinoma which may be present. Unfortunately, the same surgeon who advises the removal of an adenoma as a prophylaxis against the development of carcinoma frequently leaves carcinomatous tissue just as he would leave normal thyroid tissue in operations performed for benign lesions. Since the tumor had not been completely removed, the operation has failed in its purpose.

Surgeons should accustom themselves to thinking of discrete tumors of the thyroid not as benign adenomas which may become malignant at some remote time but rather as tumors which may be cancerous at the time of operation. If they did this they would remove the entire tumor, and should the tumor prove to be a carcinoma the chances of cure would be increased.

SUMMARY

Ten and nine-tenths per cent of surgically removed nontoxic nodular goiters and 24.5 per cent of surgically removed nontoxic solitary tumors of the thyroid proved to be malignant. The diagnosis of malignancy was made or suspected and so recorded before operation in over 90 per cent of the patients with malignancy of the thyroid.

These figures can be so presented as to indicate that (*a*) over 3 per cent of nontoxic solitary nodules of the thyroid are undiagnosed malignant tumors or (*b*) there is only 1 chance in 6,675 that removal of a nontoxic solitary nodule in the thyroid will give protection against death from carcinoma of the thyroid.

It is impossible, without better definition of histologic criteria of malignancy and without better autopsy and clinical statistics on the incidence of adenomas and carcinomas of the thyroid, to make an accurate statistical report of the true incidence of carcinoma of the thyroid in nodular goiters.

The high incidence of carcinoma of the thyroid reported by surgeons is to a large measure dependent on the fact that the obviously benign nodules in the thyroid are screened out by the patient or by the internist and are not seen by the surgeon.

Solitary adenomas of the thyroid in patients of any age should be viewed with suspicion especially (*a*) in

children, (*b*) when enlarging or giving symptoms of discomfort or pressure, (*c*) when firm or hard and (*d*) when discrete and of a different consistency from the remainder of the thyroid. Adenomas large enough to be of cosmetic importance should be removed. Soft involutionary nodules in the thyroid, especially when multiple and not large enough to be conspicuous, can be disregarded if they are not enlarging or causing symptoms.

The majority of malignant tumors of the thyroid can be recognized or at least suspected if a high index of suspicion is maintained regarding discrete adenomas. The danger is not that a discrete adenoma may become malignant, but rather that it is already malignant. If a discrete adenoma of the thyroid is to be removed, the operation should be so designed as to remove all of the tumor and cure the cancer if it is present.

Until better statistics on the true incidence of carcinoma in adenomas of the thyroid are available, it is suggested that indications for removal of nodular goiters be based on clinical judgment rather than on statistical surveys.

ABSTRACT OF DISCUSSION

DR. CHARLES W. MAYO, Rochester, Minn.: I have known for a long time and have admired Dr. Crile. I admire him because he has no fixed ideas and he is capable of changing. I bring that up because he was of that school that believed for a long time that the aberrant thyroid did not have its primary locus in the lobe itself. There are three types of adenocarcinomas of the thyroid. There is the papillary type, the so-called aberrant type of thyroid. There is the adenocarcinoma which is contained within the adenoma of the thyroid itself, or it is outside the adenoma. There is also the diffuse type of adenocarcinoma. The first, or papillary, is low grade, and the second, within or just without the adenoma, is of an intermediate grade. The diffuse type is usually a high grade type of adenocarcinoma. The papillary is considered more radiosensitive than the others. My co-workers and I have also an occasional case of sarcoma of the thyroid. Another unusual type is the squamous cell tumor of the thyroid, and we occasionally also see metastasis in the thyroid. I remember a case in which there was a carcinoma of the sigmoid metastasized to the thyroid. While statistics are not the aim alone, there is no study of any subject in medicine which does not entail the analysis of statistics. A review that Dr. Black made of cases between the years 1936 and 1945 showed that at the Mayo Clinic we see about 4.6 per cent carcinomas in the adenomatous type of gland. Dr. Kennedy made a study of children, and it was his observation that in patients under the age of 15 with single adenoma one third of the growths were malignant. I agree with Dr. Crile that the preoperative diagnosis has to be made on a clinical basis. I congratulate him on his figures, on the accuracy of the diagnosis preoperatively. Over 90 per cent is a very high rating on accuracy. I think that most of the histories, however, will show the suspicion rather than the accurate diagnosis preoperatively, which, after all, is approximately the same. But still we do see many as a pathologic surprise—a surgical surprise. I agree with Dr. Crile's philosophy as he expressed it in connection with dealing with these adenomas and the question of malignancy in thyroid disease.

DR. WARREN H. COLE, Chicago: At the Illinois Research Hospital our figures on the incidence of carcinoma of the thyroid are very similar to those reported by Dr. Crile and perhaps should be, since the patients in both series come from the Great Lakes goiter belt. Our incidence of carcinoma in solitary nontoxic nodular goiter over an eleven year period was 24.7 per cent compared with 24.5 per cent in his series. However, our incidence of carcinoma in our entire series of 274 solitary and multinodular nontoxic nodular goiter was 17.15 per cent as compared with 10.9 per cent in his series. The difference lay in a greater incidence of carcinoma in multinodular goiter in our series, namely, 9.0 per cent compared with 3.4 per cent in his series. The incidence of carcinoma in toxic diffuse and toxic nodular goiter is so low (only a fraction of 1 per cent in the former and only slightly greater in the latter) that we should not include these types in our figures.

The incidence of carcinoma in our series should no doubt be larger than Dr. Crile's because all of our patients are charity patients, whereas most of his are private patients. Charity patients do not come to the physician as soon as do private patients. Our series show that the danger of carcinoma is much greater in nontoxic nodular goiter in male than in female subjects and slightly greater in white than in Negro subjects. I agree with Dr. Crile that the percentage of carcinoma in thyroidectomy specimens is not a true index of incidence. However, the screening in our series must be attributed only to the patients, and not to the doctors, because my co-workers and I have advised operation for all solitary nontoxic nodular goiters since our first report dealing with data up to January 1944. With few exceptions, all our patients have consented to operation. Nevertheless, this policy has not decreased the incidence of carcinoma in this group. The slight change noted was actually an increase, namely, from 24.0 per cent (1936 to 1943) to 25.5 per cent (1944 to 1947) carcinoma in cases of solitary nontoxic nodular goiter. The criticism has often been made of reports on incidence of carcinoma of the thyroid that the criteria of diagnosis have not been sufficiently strict. From the data obtained in our series at Illinois Research Hospital it appears that we have a very good answer to this criticism. Of the 16 cases of carcinoma of the thyroid treated here during the past four years, we have been able to follow 14. Of these 14 patients, 10 are already dead, presumably of metastases. An additional patient has metastases, but is still alive. We know that most of these deaths were of carcinoma, but cannot prove that all were, although, since patients with carcinoma of the thyroid are relatively young, it is not likely that many of them died of natural causes.

DR. GEORGE CRILE JR.: Dr. Mayo mentioned the subject of fixed ideas. I think that thyroid is a subject on which it is very difficult to have any fixed ideas today, and I think that anyone who does have them will be in trouble because of the changes due to new methods of treatment. Dr. Mayo made one statement which I do not question because I am not in a position to do so, but I believe that it requires some proof; that is, the sensitivity of the papillary type of carcinoma to irradiation. Our experience has been that these tumors are not uniformly sensitive to irradiation. A misleading impression may be obtained because these tumors are of such low malignancy that they may be present for many years without enlarging at all, with no treatment. I emphasize this because I think that surgeons should not rely on roentgen rays in these cases. These are the most favorable cases from the surgical point of view, and one should attempt to eradicate these papillary tumors by surgical removal. With respect to the carcinomas that are not recognized before operation, I should like to point out also that there is a type of tumor in the thyroid which has been designated as an adenocarcinoma and which histologically is typical of that. These are the tumors which have been reported by Graham, Goetsch and recently by Black and others, which are only 1 or 2 cm. in diameter and are often found in diffuse hyperplastic glands. These are also found at autopsy, and their presence is rarely noticed prior to operation. They rarely, if ever, recur or metastasize and are of questionable malignancy. It has been our experience that the majority of undifferentiated rapidly fatal carcinomas of the thyroid, such as Dr. Cole must have been dealing with in this group of cases, arise without warning in thyroids that were previously considered normal. The patient may not have even been aware that there was any tumor in the thyroid, and by the time the doctor sees them they are usually incurable. I do not mean to be pessimistic about prophylactic operations. I emphasize again that nodules of the thyroid and tumors of the thyroid have malignant

potentialities. I do not believe that a 90 per cent accuracy of preoperative diagnosis can be maintained. Since these figures have been prepared I have missed 1 or 2 cases, and I am sure that I and everybody else will miss others. But I think if one carries a high index of suspicion of a solitary nodule one will have the correct attitude at the time of operation to eradicate the tumor if it turns out to be malignant.

ABNORMAL BLEEDING

Response to Treatment with Toluidine Blue and Protamine Sulfate

J. GARROTT ALLEN, M.D.
BURTON J. GROSSMAN, M.D.
RICHARD M. ELGHAMMER, M.D.
PETER V. MOULDER, M.D.
CHARLES L. McKEEN, M.D.
LEON O. JACOBSON, M.D.
MILA PIERCE, M.D.
TAYLOR R. SMITH, M.D.
and
JAMES M. CROSBIE, M.D.
Chicago

Hemorrhage arising from abnormal hemostasis is often complicated in origin and troublesome to treat. Bleeding may occur from a single disturbance in the plasma clotting mechanism, in the platelet quantity or in the integrity of the vascular wall. More frequently, spontaneous bleeding is associated with several disorders in one or more of these systems.

Reported herein are summarized data on a series of patients with spontaneous bleeding who had a similar clotting abnormality. This clotting defect was characterized by an increase in the protamine titration [1] and was frequently associated with a prolongation in the whole blood clotting time.[2] Many of these patients also had thrombopenia of moderate or severe degree.

The nature of the defect revealed by the protamine titration resembles, but is not identical with, that produced by the intravenous injection of commercial beef heparin.[2] Moreover, the protamine titration may be influenced by factors other than heparin; in fact, it is probably increased by any disturbance which interferes with fibrin formation; i. e., hemophilia and reduced prothrombin.

The blood of the patients comprising this study showed an increased protamine titration when the prothrombin level was normal or near normal, when fibrinogen levels were not abnormal and when fibrinolysin was not grossly disturbed. Although many of these patients had thrombopenia, this was an associated disturbance and was independent of the protamine titration.[3] Only rarely was the clotting time of whole blood of these patients sufficiently prolonged to delay appreciably the clotting of normal blood.

As will be shown in the data to follow, the bleeding of many of these patients appeared to respond to the administration of toluidine blue and/or protamine sulfate. These substances are antiheparins but are capable of reacting with other biologic compounds. A detailed report of this material is presented elsewhere.[4]

Methods of study in these patients included determination of the whole blood clotting time,[2] the protamine titration,[1] erythrocyte, leukocyte and thrombocyte counts, measurement of prothrombin activity,[5] and gross observation for clot retraction and fibrinolysin.

CLINICAL OBSERVATIONS

In the table are listed a number of patients with a variety of hemorrhagic disorders. As will be noted, the protamine titration was increased in all these patients, although not all responded to toluidine blue or protamine sulfate. In some, the increased protamine titration was due to hemophilia; in others, it was due to pronounced prothrombin deficiency. Neither of these groups responded to toluidine blue or protamine sulfate. The patients who did respond had neither an extreme prothrombin deficiency nor hemophilia, but they did have an increased protamine titration. It is obvious that the random use of toluidine blue and/or protamine sulfate in the treatment of hemorrhage will lead to random results. It is necessary that each patient with a bleeding tendency be studied as completely as possible with reference to the status of the hemostatic mechanism if therapy is to be correctly applied.

Abstracts of the histories of 6 patients, representative of some of the group with hemorrhagic disorders in whom this heparinoid defect in the clotting mechanism appeared to contribute to bleeding, are presented.

REPORTS OF CASES

CASE 1.—*Postpartum Bleeding.*—A 25 year old woman was admitted to the Chicago Lying-In Hospital and delivered spontaneously sustaining a second degree laceration of the perineum which was repaired with chromic surgical gut. The course of her illness was uneventful until the fourth postpartum day, when bleeding occurred from the perineal laceration. This area was resutured, but bleeding occurred at the site of each new suture. In addition, and probably accounting for most of the loss of blood, two large bleeding vessels were found in the old repair site. These were clamped; the mucous membrane was approximated with a continuous no. 0 chromic surgical gut suture, and a pack was applied. Some oozing continued.

The patient, whose blood was Rh negative AB, received 600 cc. of Rh-negative type O blood at the end of the operative procedure. Fifteen minutes after the transfusion she had a mild chill and voided urine containing hemoglobin. Although the volume of urine was reduced and the blood nonprotein nitrogen rose to 100 mg. per hundred cubic centimeters by the ninth postpartum day, complete recovery occurred.

Twelve hours after the hemorrhagic episode and ten hours after the transfusion, coagulation studies were made (fifth postpartum day) which showed the protamine titration increased to 0.400 mg. (normal value, 0.140 mg.), the whole blood clotting time in excess of three hours, the platelet count at 260,000 per cubic millimeter, and prothrombin activity at 54 per cent of normal. In addition, fibrinolysin was prominent. All clots completely lysed in less than 30 minutes once they formed. There was no evidence of fibrinogenolysin. Because of the severely prolonged whole blood clotting time, the greatly increased protamine requirement in the protamine titration and the presence of fibrinolysin, 6 mg. per kilogram of body weight of toluidine blue and 3 mg. per kilogram of protamine sulfate were given separately intravenously over a two and one-half hour period. Two hours after the toluidine blue and protamine sulfate were given, the whole blood clotting time was thirty

From the Departments of Surgery, Medicine and Pediatrics, University of Chicago.

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minutes (normal); the protamine titration was 0.200 mg. (still increased), and lysis was only questionably present. No further bleeding occurred. Six hours later the patient received 4 mg. per kilogram of toluidine blue intravenously and was started on 1 mg. per kilogram of protamine sulfate intramuscularly every six hours.

On the sixth postpartum day, and six hours after completion of the second dose of toluidine blue, the clotting time was thirty minutes and the protamine titration was 0.140 mg. (normal). The prothrombin was 64 per cent of normal activity and the platelet count unchanged. Fibrinolysin was slightly increased over that of the night before but was negligible compared with the initial finding. Later this day, a third dose of toluidine blue (6 mg. per kilogram of body weight) was given intravenously, after which the clotting time was normal, and protamine titrations remained normal. The prothrombin time did not reach normal values until ten days later.

A second transfusion of 600 cc. of AB Rh-negative blood was given on the seventh postpartum day, at which time toluidine blue was discontinued. Protamine sulfate was continued as an intramuscular injection of 1 mg. per kilogram every six hours until the thirteenth postpartum day and the ninth posthemorrhagic day. She was discharged from the hospital two days later. The subsequent course has been uneventful (four months follow-up study).

CASE 2.—*Bleeding at Puberty.*—A 16 year old white girl was admitted with a history of irregular and profuse menstrual bleeding for one and one-half years. This had preceded a five month period of amenorrhea following removal of two ovarian cysts. Two uterine curettements were performed without relief, and the removed endometrium was normal.

At the time of admission to the Chicago Lying-In Hospital she had been continuously spotting for ten months, with increased bleeding whenever she became active.

Laboratory findings showed 4,100,000 erythrocytes and 280,000 thrombocytes per cubic millimeter. The hemoglobin content was 12.3 Gm. per hundred cubic centimeters; red cell volume was 40 per cent. Protamine titration showed 0.160 mg. of protamine (increased 0.020 mg. above normal). The whole blood clotting time was 45 minutes (normal, 26 to 32 minutes). Toluidine blue, 6 mg. per kilogram of body weight, was given intravenously daily and protamine sulfate, 1 mg. per kilogram, intramuscularly, every six hours for two days. Vaginal bleeding stopped, and the protamine titration and the clotting time were returned to normal within 24 hours. She was discharged four days later with no further bleeding. Follow-up studies have shown normal results but are too brief for comment.

CASE 3.—*Menorrhagia.*—A 29 year old white woman had a seventeen year history of profuse and prolonged menstruation, chronic anemia and dysmenorrhea. She maintained a twenty-eight day cycle with six or seven day bleeding periods. In 1946, a uterine curettement was performed, but no pathologic process was demonstrated. She had decreasing relief for about five months.

On four separate occasions, on the second or third day of her periods, she had whole blood clotting times of 27 to 49 minutes and protamine titrations of 0.160 or 0.180 mg. of protamine, with 110,000 platelets per cubic millimeter. Two studies near the midcycle demonstrated normal protamine titrations (0.140 mg.) and clotting times of 38 minutes, with 190,000 platelets per cubic millimeter. She received a single intramuscular injection of 50 mg. of protamine, and the vaginal blood flow decreased to a normal level on four consecutive menstrual periods. The protamine titration returned to normal in twelve to twenty-four hours after each injection.

CASE 4.—*Postsplenectomy Hemorrhage in Idiopathic Thrombopenic Purpura.*—The patient was a 15 year old girl who showed petechiae, nasal bleeding and menorrhagia two months before admission to another hospital, where a platelet count of 20,000 per cubic millimeter was found. The leukocyte count was 8,000 and the differential normal. The following day splenectomy was done, during which abnormal bleeding was encountered. Six transfusions were given before and during operation. The early postoperative response was satisfactory, and by the third day the platelet count was 300,000 (see figure).

On the fourth postoperative day, bleeding occurred from the nose, mouth, vagina, rectum and the operative wound. Her laboratory data at this time disclosed a platelet count of 24,000. Twelve whole blood transfusions were given over the first nine postoperative days. In addition, 8 mg. of vitamin K, 150 mg. of ascorbic acid and 150 mg. of rutin were given but without apparent effect on the bleeding tendency. At this point (the ninth postoperative day), 300 mg. of toluidine blue was given intravenously (6 mg. per kilogram of body weight). Bleeding ceased for thirty-six hours but then resumed. Toluidine blue, 300 mg., was again given on the eleventh, twelfth and thirteenth postoperative days; the dosage level was then reduced to 150 mg. daily on the fourteenth, fifteenth, sixteenth and seventeenth days. Except for slight vaginal bleeding, which continued until the eighteenth postoperative day, no other evident bleeding occurred after the eleventh day. Ecchymotic areas were completely absorbed by the twenty-eighth postoperative day.

The patient was admitted to the surgical service of the University of Chicago Clinics on the seventeenth postoperative day with evidence of a subphrenic abscess on the left side. Since the patient had to come 200 miles, a transfusion of type ORh-positive blood was given prior to the trip and on the day of travel. Acute hemolysis and jaundice developed. On her

Data on Patients with Bleeding Disorders Given Toluidine Blue and/or Protamine Sulfate Therapy

Diagnosis	Number of Patients	Clotting Studies: Protamine Titrations: Increased Before Therapy	Clotting Studies: Protamine Titrations: Decreased After Therapy	Clotting Studies: Whole Blood Clotting Time: Increased Before Therapy	Clotting Studies: Whole Blood Clotting Time: Decreased After Therapy	Clinical Observations: Bleeding Stopped	Clinical Observations: Bleeding Lessened	Clinical Observations: No Response
Postpartum hemorrhage	5	5	5	3	3	5	0	0
Acute leukemia	6	6	6	2	2	5	1	0
Chronic leukemia	2	2	2	2	2	2	0	0
Irradiation hemorrhage	3	3	3	0	0	3	0	0
Nitrogen mustard therapy (Hodgkin's disease)	5	5	5	4	3	4	1	0
Idiopathic thrombopenic purpura (Werlhof's disease)	7	3	3	1	1	0	3	4
Secondary thrombopenia and panecytopenia	4	3	3	2	2	3	0	0
Lymphoma?	1	1	0	1	0	0	0	1
Nephritis and uremia	2	2	2	2	2	2	0	0
Excessive vaginal bleeding at puberty	2	1	1	1	1	2	0	0
Postsplenectomy hemorrhage complicating idiopathic thrombopenia	1	1	1	1	1	1	0	0
Menorrhagia (41 separate treatments)	32	32	..	24	..	27	7	7
Prothrombin deficiency	2	2	0	2	0	0	0	2
Hemophilia	2	2	0	2	0	0	0	2

admission here, the platelet count was 17,000 per cubic millimeter; the leukocyte count was 17,250. The hemoglobin concentration was 12.5 Gm. per hundred cubic centimeters. Jaundice gradually lessened but resulted in anemia. On the twenty-eighth and thirtieth postsplenectomy days a two stage transthoracic exploration of the subphrenic space was carried out without incident or abnormal bleeding. The values for protamine titrations on these two days were normal. The patient slowly improved and was discharged on the forty-second postsplenectomy day and returned to school on the sixty-third day.

CASE 5.—*Acute Leukemia.*—A 23 year old white woman presented a three month history of vaginal bleeding following a spontaneous abortion. She was unrelieved by two uterine curettages and administration of whole blood infusions and vitamin K, ascorbic acid and rutin. At the time of hospitalization, she had vaginal, rectal, nasal and oral bleeding. Numerous petechiae and ecchymoses were evident in the skin and conjunctivas. Laboratory findings disclosed 25,000 leukocytes, 1,900,000 erythrocytes and 20,000 platelets per cubic millimeter. Whole blood clotting time was 23 minutes; protamine titration showed 0.180 mg. of protamine (an increase of 0.040 mg.). Peripheral blood smears and bone marrow studies were compatible with the diagnosis of monocytic leukemia.

She received 4.5 mg. per kilogram of toluidine blue, and in 24 hours there was no obvious bleeding, although she had an emesis of old blood at this time. No new petechiae or ecchymoses appeared. She received 4.5 mg. per kilogram of toluidine blue for four days and then one dose two days later. During this period she had four daily doses of 1 mg. of aminopterin® (4-aminopteroylglutamic acid). With a change of the nasal oxygen catheter, she had episodes of nasal bleeding and vomited small amounts of dark blood soon after each of these episodes. The clotting time remained normal at 20 minutes, and the titration decreased to 0.160 mg. of protamine on the second day and to normal (0.140 mg.) on the third day. She died on the seventh day of leukemia and pneumonia.

CASE 6.—*Irradiation Hemorrhage.*—The patient was a 40 year old white woman with carcinoma of the breast and metastases to the bones for three and one-half years. She had received a course of roentgen therapy in 1945 with relief until the summer of 1947. She then received three courses of radioactive phosphorus from July to November 1947. In June 1948, she received 3 millicuries of P^{32}. Twelve days later she showed mild bleeding of the gums. At this time she had a protamine titration of 0.180 mg. of protamine. The platelet count was 95,000 per cubic millimeter. Five weeks later, with profuse oral and vaginal bleeding, her protamine titration was 0.20 mg. of protamine. She declined therapy, but, as the hemorrhage increased, she returned in four days and was given 300 mg. of toluidine blue intravenously. Bleeding stopped in eight hours. The following day her protamine titration was 0.180 mg. of protamine. The day after this she received another dose of 6 mg. per kilogram of toluidine blue, and after this her protamine titration was normal (0.140 mg.). She received two more infusions of toluidine blue, and no more hemorrhagic episodes occurred. She died of carcinomatosis two months later.

COMMENT

The protocols of patients 1, 2, 3 and 4 suggest that their hemorrhagic episodes may have been in part related to endocrine disturbances, especially in the estrogens. All 4 of these patients bled at times when severe endocrine disturbances are known to occur. The significance of such an association is not known, although it is well established that menstrual bleeding may be induced by sudden estrogen withdrawal in certain circumstances. The hemorrhagic complications of these patients responded to adequate toluidine blue and/or protamine sulfate and, once controlled, presented no further problem.

The patients with "malignant" blood diseases associated with hemorrhage who showed an increase in the protamine titration and in the whole blood clotting time, gave a more variable clinical response to toluidine blue therapy. Many showed an early response, while others required three to six days of therapy. In all patients, the clinical response was paralleled by an improvement in the protamine titration. The whole blood clotting time was returned to or toward normal, although in some patients it was never increased. The platelet count was unaffected by the clinical response and generally remained in the range of the pretreatment level. However, when bleeding was from ulcerated and denuded areas in the thrombopenic patient, it was more difficult to control with toluidine blue. This was probably due largely to impaired platelet thrombi formation, which neither toluidine blue nor protamine appeared able to affect.

The choice between toluidine blue and protamine sulfate in the treatment of the hemorrhagic states herein discussed has largely depended on the nature of the primary disorder. When bleeding was essentially uncomplicated, as it was in menorrhagia and postpartum bleeding (four to eighteen days), intramuscular administration of protamine sulfate has given results equal to or better than those of the dye. Protamine sulfate

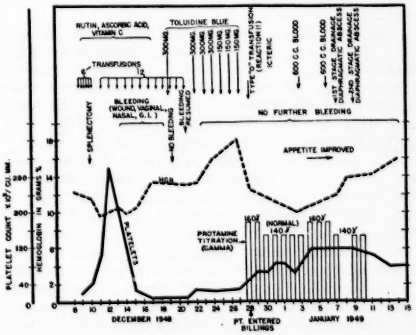

Chart showing course of treatment followed in a patient with idiopathic thrombopenic purpura (case 4) whose blood type was AB, Rh-positive.

is rapid in action and well suited for patients of these types. In bleeding associated with serious marrow disorder, whether spontaneous or induced, toluidine blue has been much more effective than protamine sulfate. Its action is slower but more prolonged than that of protamine. In some patients combined therapy was used (case 1). When used intramuscularly for postpartum hemorrhage, 50 mg. of protamine sulfate was administered in a 5 cc. aqueous solution every four to six hours. Usually an intravenous injection of 150 mg. of protamine was given in saline solution slowly (over a one hour period) and simultaneously with the first 50 mg. intramuscular dose. Occasionally, pain at the site of injection occurred, especially when the infection was subcutaneous. Careful intramuscular injection generally produced little, if any, reaction.

The dosage range for toluidine blue varied considerably. Based on previous experience, we are currently administering 6 to 8 mg. of toluidine blue per kilogram of body weight daily for three days and, thereafter, half this dose is given daily for three more days. This regimen is followed, even though the early control of bleeding may be achieved, because there is a relatively

high incidence of recurrence of bleeding when less vigorous therapy is employed. The dye is dissolved in isotonic sodium chloride solution and passed through a Seitz filter for sterilization and removal of small undissolved particles. It is administered slowly, intravenously, over a two hour period. Transient nausea and vomiting has been observed in about 15 per cent of the patients who received toluidine blue. This has not proved a serious problem. A slight but transient blue tint of the skin has been noted in several of the more anemic patients.

Many of the patients stated they felt better after toluidine blue was administered. While this response may have been due to the psychologic effect of the events commonly associated with therapeutic measures of this type, it is also known that the dye is capable of increasing the oxygen uptake of the tissues. In support of the latter, we frequently noted that the color of the venous blood in these patients at the time of hemorrhage was darker than normal and that the normal color was restored after adequate therapy with toluidine blue. These color changes were independent of the patients' blood pressure readings. The normal color could be reestablished when such bloods were aerated.

The data which comprise the table were obtained from patients whose hemorrhagic diathesis occurred spontaneously, or was a complication of a primary hemocytologic disorder, or was produced by certain agents currently employed in the therapy of leukemia and allied disorders. The clotting problem of the entire group, however, appeared similar, if not identical.

The nature of the defect appears to be heparinoid, but it is probably not identical with that produced by the intravenous injection of commercial beef heparin. The point of greatest dissimilarity is that related to anticoagulant activity, for on only a few occasions could an anticoagulant effect be demonstrated in the bloods of these patients. A strong argument in favor of the heparinoid nature of the clotting disturbance(s) could be made on the basis of the patients' response to toluidine blue and/or protamine sulfate. These agents are known to inhibit heparin. Unfortunately, these agents can also react with other endogenous substances, some of which are mildly anticoagulant and not closely related to heparin, e. g., nucleic acid.[6] It seems that a specific conclusion as to the exact nature of the deranged clotting mechanism in these patients is unwarranted and undesirable at this time.

The value of toluidine blue as an antihemorrhagic agent in patients of the type herein presented is more fully described elsewhere.[4] In some, it was of genuine value in that uncontrollable bleeding was checked when other methods had failed. Several of these patients suffered from nonmalignant disease and made subsequent uneventful recoveries. Patients whose bleeding was associated with malignant disease were frequently temporarily relieved of the distress of bleeding, although bleeding tended to recur in this group unless toluidine blue was administered at regular intervals. In the leukemic patient treated with aminopterin,* the control of bleeding presented a more difficult problem, for aminopterin* is in itself capable of producing bleeding and an increased protamine titration in the normal animal.[7] The desquamatory enteritis which may occur when too much aminopterin* is administered gives rise to focal bleeding in addition to its effect on the clotting mechanism as a whole. This is not a serious problem when the platelet count is normal, but it may become disastrous in the presence of a coexisting thrombopenia so frequently seen in acute leukemia. Healing of such areas is the only way by which gastrointestinal bleeding of this type may be completely controlled in the aminopterin*-treated leukemic patient. Toluidine blue will partially or completely control the central clotting defect(s), but it is not a substitute for platelet thrombopenia in ulcerated areas. However, as Farber [8] pointed out, aminopterin* properly used need not produce extensive intestinal lesions, and, thus, a serious hemorrhagic problem can be avoided.

Toluidine blue has proved of no value in patients with uncomplicated idiopathic thrombopenia. However, in 3 of our patients on whom this diagnosis was made, the protamine titration was increased. These 3 showed some improvement on administration of toluidine blue but not sufficient to withhold splenectomy. As illustrated in the figure (case 4), considerable benefit was obtained when toluidine blue was administered after splenectomy, even though pronounced thrombopenia continued for some time.

The correlation between the clinical response in these patients and the improvement in the protamine titrations has been striking. Although several ceased bleeding before the titration was completely returned to normal, and several showed a temporary increase in the titration without a return of bleeding, all responded appreciably when the normal titration was reestablished. To date, this has proved the most useful guide that we have been able to devise for estimating clinical progress in this type of hemorrhagic disorder.

SUMMARY

1. Abnormal bleeding may result from a heparinoid disturbance in the clotting mechanism. This heparinoid state resembles but is not identical with that produced by intravenous injection of commercial beef heparin.

2. Patients with this defect show an increase in the protamine titration and frequently show a prolongation of the whole blood clotting time. Many of these patients also had severe thrombopenia. In others, hemorrhage occurred when the platelet count was normal.

3. The bleeding in most of these patients responded to adequate therapy with toluidine blue and/or protamine sulfate. It is pointed out that both of these agents are capable of reacting with several endogenous compounds in the body other than heparin. Some of these endogenous compounds are heparin-like, but the rest appear unrelated to heparin.

4. The defect presented by thrombopenia did not respond to this form of therapy. In those few patients with idiopathic thrombopenia and an increased protamine titration who did respond to the dye, the response was inadequate to warrant withholding splenectomy. Thrombopenia was observed to occur with or without an increased protamine titration and *vice versa*. While these two changes were frequently associated, they appeared to be independent phenomena.

5. The random use of toluidine blue and/or protamine sulfate will lead to random results.

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PHYSICAL TREATMENT OF THE HEMIPLEGIC PATIENT IN GENERAL PRACTICE

HAROLD DINKEN, M.D.
Denver

During the past several decades spectacular advances in the preventive and therapeutic aspects of medicine have resulted in a greater life expectancy for the general population. Physicians have been faced with the responsibility of caring for an ever increasing number of patients with chronic disease processes common to later life. Cerebrovascular lesions with their resultant motor disability are prominent among this group; yet, for the most part, the problems of the hemiplegic patient remain unsolved.

The general practitioner of medicine is primarily responsible for the care of this large group of hemiplegic patients. It is essential that he face this task with realistic optimism, for much can be done to help restore these persons to lives of independence and productivity.

Relatively little is known of the basic neurophysiologic mechanisms involved in the production of this clinical syndrome. There is an even greater lack of knowledge relative to the factors which influence recovery. Basic concepts, such as the origin of the pyramidal tracts, the identity of the "motor cortex," the mechanism of the production of "spasticity" in human beings and the role of commissural, associational and projection pathways,[1] remain unsettled. Yet there are some available facts which should be utilized in one's understanding and adequately treating human motor dysfunction as it occurs in the hemiplegic patient.

Cerebrovascular accidents are usually associated with some degree of "neurologic shock," characterized by flaccidity. The duration of the period of shock and flaccidity varies greatly. It may disappear within a few hours, or it may persist for several weeks or more. True, prolonged flaccidity is a poor prognostic sign,[2] in terms of recovery of motor function. As flaccidity disappears, the involved members become spastic, a sign of returning function. The hemiplegic patient then enters the second phase of recovery, which is slower and more prolonged. Recovery in this phase may be due to what Hughlings Jackson calls "compensation." He believes that movement of one side of the body has bilateral representation in the cerebral cortices, although to different degrees. Many investigators have postulated some form of "functional reorganization" of the remaining cerebral tissue following cortical lesions. Whether this is due to synaptic modification, neurochemical processes or to conditioning and relearning remains a mute question.

Basically, the prognosis will depend on the nature, size and location of the lesion. Age, sex and side involved, in themselves, are not of great importance. In addition to prolonged flaccidity, several other factors adversely affect prognosis. These include severe emotional disturbances or psychotic phenomena, lack of motivation, presence of associated disease, such as chronic nephritis, diabetes and syphilis, and previous "strokes." Prognosis is also adversely affected by delay in institution of physical treatment and by the development of contractures and deformity. Functional recovery, as a rule, is best in the group of patients in which thrombus formation is the causative factor, poorer in the hemorrhage and embolic groups.

Functional capacity does not correlate well with return of motor power. It is usually slower in returning than is motor power. Function returns earlier and to a greater degree in the lower extremity as compared with the upper extremity. The proximal segments in a given extremity return sooner than the distal ones. For example, hip function returns before lower leg or foot, upper arm before hand. Paralysis of an individual muscle or group is rarely seen in the hemiplegic person; there is loss of gross "movement," such as the ability to dorsiflex the foot, rather than paralysis of the anterior tibial muscle, per se. The seat of individual muscle action is the "motor cortex." Movement is represented in the general area of the frontal lobe.

CHART 1.—*Method of Scoring Units of Motor Function*

Motor Test Grades	Unit Score
Zero	0
Trace	1
Trace plus	2
Poor minus	3
Poor	4
Poor plus	5
Fair minus	6
Fair	7
Fair plus	8
Good minus	9
Good	10
Good plus	11
Normal	12

TREATMENT

The aims of physical treatment in general are to improve motor function, increase functional capacity, prevent or correct deformity and provide for the over-all adjustment of the hemiplegic patient to the demands of daily life.[3] In accomplishing these aims, the practitioner may utilize a wide variety of agents or technics of physical medicine, which embraces the fields of physical therapy, occupational therapy and rehabilitation.

There are three basic considerations in planning treatment. They are: (1) when to start physical treatment, (2) the measurement of disability and progress and (3) the proper selection of the agents or technics to be used.

Treatment should be instituted as soon as possible. In the majority of cases it can be started within the first week following onset. There are few medical contraindications to early treatment in most cases, especially to passive movement of the involved extremities daily, which is particularly important. The fear of producing extension or reactivation of the cerebral vascular lesion is apparently without justification, as indicated by clinical experience.

Much of the crippling deformity seen in this group of patients can be avoided by early adequate treatment. The common occurrence of contractures about the

Director, Department of Physical Medicine and Rehabilitation, University of Colorado Medical Center, Denver.

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1. Cobb, S.: Bull. New York Acad. Med. **19**: 34-46 (Jan.) 1943.
2. Aring, C. D.: Flaccid Hemiplegia in Man, Arch. Neurol. & Psychiat. **43**: 302-317 (Feb.) 1940.
3. Deaver, G. G., and Brown, M. E.: Physical Demands of Daily Life, New York Institute for Crippled and Disabled, 1945.

shoulder joint, the so-called "frozen shoulder," can be avoided as can the flexion deformities of wrist and fingers, the externally rotated hip, the flexed knee and the dropped foot.

Without objective measurement of the extent of disability and progress in recovery, treatment can be only intuitive, empiric and inadequate. Ideally, such measurement should include determination of muscle strength, range of joint motion and functional testing of the factors inherent in daily living. A method of evaluation which I [4] have found useful, is as follows:

With a modified Lovett method of manual muscle testing, muscle strength is graded in twelve gradations from 0 through

CHART 2.—*Motor Test for Upper Extremity*

	Grade	Motor Units
Shoulder		
Flexion—extension	T +, P −	5
Hyperextension	F −	6
Abduction—adduction	F +, F	15
External rotation—internal rotation	P, F +	12
Elbow		
Flexion—extension	G −, F	16
Pronation—supination	P −, P	7
Wrist		
Palmar flexion	T	1
Dorsal flexion	T	1
Radial flexion	O	0
Ulnar flexion	O	0
Hand (fingers)		
Flexion—extension	P −, T	4
Abduction—adduction	T, T	2
Opposition	O	0
Score (normal 240)	Total	69 units 29% of normal

CHART 3.—*Motor Test for Lower Extremity*

	Grade	Unit Score
Hip		
Flexion—extension	G, F −	18
Hyperextension	P +	5
Abduction—adduction	G +, G +	22
External rotation—internal rotation	G F	17
Knee		
Flexion—extension	F, G +	18
Ankle		
Plantar flexion	F −	6
Dorsal flexion	N	12
Inversion	P	4
Eversion	F	7
Toes		
Flexion—extension	O, T	1
Score (normal 180)	Total	110 units 61% of normal

normal. Numerical values, units of motor function, are assigned to each gradation (chart 1). There are twenty movements so tested in the upper extremity (chart 2), so that the score would range from 0 (in complete flaccid paralysis) to 240 units in the normal arm (20×12). Similarly, fifteen movements are tested for in the lower extremity (chart 3) with a possible score of 0 to 180 units. Thus it is possible at any moment to determine objectively the extent of disability or percentage return of motor power in a given hemiplegic patient.

In addition, the patient is tested as to his ability to perform the activities essential in daily living (chart 4). Using a numerical grade for each of the sixty items tested, the score possible ranges from 0 to 180. It is thus possible to determine improvement in percentage values at subsequent testings. Such functional testing is of great importance to the physician, for it indicates what the patient can do with his disability and what he must be taught to do.

It is obviously difficult and time consuming to carry out such detailed testing in the busy routine of a general practice. However, some simpler but similar plan of testing can be worked out to suit the individual physician's need. From the point of view of measuring the extent of involvement and progress it is invaluable. Further, it serves as a basis for instituting physical treatment truly adequate to meet the individual patient's needs.

As previously indicated, there are numerous effective agents and technics available to the practitioner in the management of his hemiplegic patient. Any combination of the following items may be required in the individual case:

I. Physical Therapy
1. Heat (hot packs, infra-red, paraffin, etc.)
2. Massage
3. Electrotherapy, i. e., low frequency current for electrical stimulation
4. Mechanotherapy (pulley exercises, shoulder wheel, parallel bars, etc.)
5. Exercise (passive, active assistive, active and active resistive, muscle reeducation, gait retraining, speech, etc.)
6. Appliances (splints, braces, crutches, canes, etc.)

II. Occupational Therapy
1. Diversional activities (tonic)
2. Functional activities, i. e., fine coordination of fingers, hands, etc. (kinetic)
3. Prevocational (metric)

III. Rehabilitation
1. Physical
2. Psychologic-psychiatric
3. Social
4. Educational
5. Vocational

There are three principal indications for the use of heat in hemiplegia. They are the presence of pain, spasticity and edema. Any form of heat, therapeutically active, will suffice, although many patients seem to fare better with moist heat in the form of hot packs. Heat should be followed by massage, especially if edema is present. Aside from these limited indications, heat and massage are of little value. It is infinitely more important to devote time to the functional program of retraining and movement reeducation.

There is a limited field of usefulness for low frequency currents, such as the interrupted galvanic. Occasionally, when flaccidity persists, electrical stimulation will serve to maintain tone and prevent atrophy. It may also be of value in the initiation of the program of movement reeducation. Spastic groups should not be stimulated, since this would tend to accentuate existing muscle imbalance.

Movement reeducation is of prime importance. It must be done carefully, indicating to the patient origins and insertions and type of movement desired. Often, reciprocal motion or use of the good extremities first will be of help. It is surprising how very frequently movement is possible even though the patient, on direct questioning, denies ability to use the part. Walking reeducation should be graduated as progress is made.

4. Dinken, H.: Arch. Phys. Med. **28**: 263-272 (May) 1947.

As a general rule, when the quadriceps can function against gravity and there is sufficient stability at the hip and ankle, the patient should be gotten up. Every attempt should be made to make the patient ambulatory as soon as possible. Some mechanical aid may be required, at first, in the walking program. Postural and balance training should be incorporated in the program.

Pulley exercises are of great value in the treatment of the hemiplegic patient. They offer reciprocal motion which is invaluable in relearning. Secondly, they permit adequate stretching of contractures, such as occur in the shoulder. The patient is responsible for the movement and hence does not fear the pain of passive stretching done by some one else. An additional increment of several degrees of motion can frequently be obtained.

Appliances are often indicated. Splints may be made of plastic or of padded plaster shells. They are especially useful in prevention of contractures of the wrist and fingers. A short leg brace with a 90 degree stop at the ankle may be required to correct a persistent drop foot which interferes with walking. The use of a foot board early, to keep weight of the bed clothes from the lower extremities, is of value. Sandbags or pillows may be used to maintain normal alinement in bed.

CHART 4.—*Functional Test of Activities Inherent in Daily Living*

Activity	No. of Items	Normal Score	Test Score
1. Locomotion and traveling	22	66	14
2. Dressing activities	8	24	6
3. Toilet activities	7	21	13
4. Eating activities	8	24	10
5. Hand activities	15	45	17
Total	60	180	60 30% of normal

Occupational therapy utilizing the arts and crafts provides many activities designed to improve muscle strength, coordination and endurance. These activities are also valuable in providing reciprocal motion and movement reeducation. Properly prescribed and carried out, it is invaluable as a morale booster and as an outlet for the patients' useless anxiety. Remember, action absorbs anxiety; however, it is more important for the patient to learn left-handed writing or shoe string tying than it is to weave a rug. Activities must be provided that are both diversional and useful.

As the final step in the development of self reliance and independence, the physician must make available to the hemiplegic patient a rehabilitation program aimed at returning him to society as a productive rather than a dependent citizen. Most communities have scattered rehabilitation services available. These must be coordinated and integrated into the therapeutic program.

SUMMARY AND CONCLUSION

An objective method of evaluating disability and progress of the hemiplegic patient is presented. Factors influencing recovery of function are briefly discussed. The nature and scope of physical treatment are outlined, with stress laid on the importance of early individualized therapy. Recovered functional capacity, in this important disabling condition, can be definitely increased by adequate physical treatment.

PANEL DISCUSSION

DR. SEDGWICK MEAD, St. Louis: What is the best approach to the treatment of weakness of the extensors of the wrist and fingers in the hemiplegic patient?

DR. HAROLD DINKEN: True weakness of the extensors is a rather common occurrence. The thing that makes it difficult is that the flexors are usually spastic and contracted, thus preventing the extensors from acting. In the great majority of the hemiplegic patients, if one would prevent the flexion deformity, the extensors would not be nearly as weak as they would seem to be. The approach should be in stretching of the flexor groups, maintaining motility of the fingers and wrist and occasionally electrical stimulation of the extensor group early followed by resistance exercises, as strength returns.

DR. SEDGWICK MEAD: Would you advocate splints to minimize flexor overaction?

DR. HAROLD DINKEN: The plastic splint for the forearm, with the wrist slightly in extension and the fingers in extension, would be of extreme value. It is not so much a problem of weakness of the hemiplegic patient as it is a loss of the ability to carry out the program of movement. Strength returns quickly, and apparently weakness is due to inability to utilize muscle groups that are present or to act against spastic groups which prevent movement.

DR. ISADOR BLUM, Newark, N. J.: What do you do for shoulder pain?

DR. HAROLD DINKEN: That is not a common problem unless one encounters contracture. In most patients in whom pain is present, it is associated with a flexion and adduction deformity at the shoulder. If pain occurs and is associated with such deformity, the use of dry heat, moist packs or a diathermy cable providing induction heating over the shoulder area, followed by massage and stretching, is helpful. Intractable pain is rare. I have had very few patients who have had pain that could not be relieved by conservative measures. If it is present, there is the problem of organic lesions which involve the thalamus and produce pain which does not respond to any physical measures. Pulley exercises to stretch the contractures about the shoulder joint are of great value.

DR. GEORGE J. BOINES, Wilmington, Del.: Do you recommend the use of curare?

DR. HAROLD DINKEN: I have not used curare, and I do not use neostigmine. I obtain fairly good relaxation by the use of heat where indicated. If one could not get enough relaxation for the program of muscle reeducation and movement reeducation, one would be tempted to try neostigmine. Many have used it and claim good success. I know little about the use of curare in hemiplegic treatment.

DR. JOHN M. SCHWARTZ, Oakmont, Pa.: What has been your experience with galvanic current in flaccid muscles?

DR. HAROLD DINKEN: It is helpful from the point of view that it will prevent or tend to prevent atrophy, and it will help immeasurably in muscle reeducation. That is the greatest argument for the use of the galvanic current. Manually, one attempts to stimulate that group by stretching and reeducation, but the patient is unable to get through that pathway. If one can secure a good contraction by the use of the interrupted galvanic current, the patient is aware of the muscle group one is working with and frequently can begin movement.

DR. GEORGE J. BOYNTON: I have used curare in hemiplegia. Curare, or any other such drug, should not be used alone, but in connection with good muscle reeducation, muscle stretching and probably relaxation at the same time.

DR. HAROLD DINKEN: I think that is important. I am convinced that there is no short cut in retraining the hemiplegic patient. Muscle education is the most important single item in the training program.

SOME BASIC PRINCIPLES AND PROBLEMS OF CLINICAL ALLERGY

FRANK A. SIMON, M.D.
Louisville, Ky.

It is not the purpose nor is it possible in this presentation to consider most or even many of the known facts and unsolved problems of clinical allergy. Rather it is my hope to consider briefly some of the more important and more fundamental aspects of the known and the unknown in clinical allergy. In a relatively new and rapidly developing field it is natural that there should be some controversy and honest differences of opinion. It is only with more time and more careful work that such differences can at least partially be resolved. Without going into a philosophic definition of knowledge, I think it necessary to point out that the line of cleavage between the true and the false in clinical medicine is sometimes not as sharp as one would like to have it but that it often seems to consist of different degrees of probability. Pragmatically, this is the same as saying that certain concepts are more workable, more in agreement with generally accepted facts, or that they are less workable, less in agreement with these facts.

It is literally true that everybody is allergic to many things, because each of us is beset every day of his life by threatened invasion with micro-organisms and, in mobilizing body defenses in successfully overcoming such invasions, has developed numerous specifically altered reaction capacities. Such allergies are, on the whole and in general, beneficial to the infected host. But allergy is not always directed toward infecting micro-organisms, nor is it always a beneficial phenomenon. There occur what appear to be aberrations or perversions of this process, so that many of us find ourselves allergic to foods, pollens and other substances which are harmless in themselves but which we, by our overzealous and misdirected defense, render harmful. We make much ado about nothing and then have a problem on our hands. The human organism is marvelously adapted to its environment, but organic evolution is still in progress; perfection has not yet been attained.

It is not known why allergies develop in some persons so much more readily than in others or why the allergy is directed toward certain substances rather than toward others. It is known that some substances are stronger sensitizers than others and that certain substances, such as sodium chloride, dextrose, urea and uric acid, have never been known to sensitize. It is also known that in one common type of allergy, often called atopy, a hereditary predisposition exists. It is not the allergy itself that is inherited but rather the predisposition to become sensitized. So far as is known the allergy always arises as the result of allergenic stimulation. In cases of congenital (or apparently congenital) allergy there is always at least the possibility of allergenic stimulation, either intrauterine or extrauterine. The predisposition appears to be directed toward certain allergens rather than others and also seems to be in existence for limited periods of time. Patients become sensitized to substances to which they are exposed. The route of exposure may be by way of the respiratory tract, the alimentary tract, the skin, parenteral injection or focus of infection.

The resulting hypersensitiveness varies in intensity in different persons and toward different substances in the same person. One patient may be many thousands of times more sensitive than another. A great many allergies are so weak that, under ordinary conditions of exposure, they result in no symptoms whatever. In other cases they are above threshold of clinical symptoms and have to be considered in evaluation of patients' illnesses.

LOCALIZING INFLUENCES

The location of the allergic reaction and the reference site of the symptoms are in general often determined by the route of exposure to the allergen. For example, asthma and rhinitis are usually caused by substances inhaled into the respiratory tract, gastrointestinal symptoms are usually caused by foods taken into the alimentary tract and eczematous dermatitis is usually caused by substances which come into direct external contact with the skin. But while the route of exposure to the eliciting contact is an important determinant of the localization of symptoms, it is by no means the only determinant. Another group of factors plays an important role. The same food eaten by one patient may cause nausea and vomiting; by another, asthma; by a third, urticaria, and by a fourth, headache. These localizing influences are often called the shock organ factor, and, while little is known of their fundamental nature, they are believed to be very important. Sometimes they seem to consist of a local tissue sensitization, as, for example, in the case of the epidermis. Poison ivy extract injected parenterally (in moderate amounts) causes no symptoms, but applied to the cutaneous surface—to the sensitive epidermal cells—results in an eczematous dermatitis. One of the outstanding characteristics of allergy is specificity. A patient may be highly sensitive to one substance and have no demonstrable sensitivity to many other substances. However, one finds many instances of group relationship among allergens, as for example among the fishes, legumes, cereal foods, certain groups of pollens, mammalian danders and serums. There is evidence to support the belief that the allergy, in many such cases, resulted from exposure to one member of the group and that reactions to other members are simply crossed reactions. It is probable that biologically related substances contain common allergenic determinants, and it is also probable that antibodies are not absolutely, but only relatively, specific, that they are capable of reacting not only with the allergen which stimulated their production but also with allergens which are closely related chemically.

URTICARIAL REACTIONS

Allergic reactions of the urticarial type (including asthma and hay fever) seem to be associated with the liberation of a histamine-like substance, but this substance probably bears no relationship to the tuberculin type reaction, the eczematous reaction or other types of allergic reactions. Intracutaneous injection of histamine produces an urticarial wheal, but a patch test with histamine does not produce eczema. In the allergies of the respiratory tract, a great deal of progress has been made in identifying pollens, fungi and numerous perennial inhalants which act as allergenic excitants of these syndromes, but important causes remain to be discovered and some of these are undoubtedly allergens. The nature and biologic origin of the important house dust allergen (or allergens) remain undetermined. Many cases of asthma, rhinitis and conjunctivitis, which closely resemble proved allergic

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analogues, cannot be satisfactorily explained on the basis of known allergens. Many suspect that allergens are involved in such cases, but they have not been identified in external agents or in bacteria, fungi, viruses and other micro-organisms that reach the respiratory tract. Present concepts of the pathologic physiology of bronchial asthma are based to a considerable extent on indirect evidence and analogy rather than on direct observations. Opinions differ regarding the relative importance of congestion and edema of the bronchial mucosa, muscle contraction and secretions in the bronchi. Among the more important problems awaiting solution are those regarding the fundamental nature of the shock organ factors, the possibility of local specific tissue sensitivities, the relationship between so-called intrinsic and extrinsic asthma and the relationship of infection to this disease.

GASTROINTESTINAL SYMPTOMS

Gastrointestinal symptoms are often due to food idiosyncrasy, but it is not known to what extent this idiosyncrasy is based on a specifically acquired alteration in reactive capacity and to what extent some other mechanism is responsible. In some cases a specific allergy can be demonstrated by cutaneous tests, but reactions are often negative and in these cases one wonders where the true allergen is a partially digested food, whether the allergy is limited to the gastrointestinal tract or whether there is some other explanation. There is need of a good simple efficient method of identifying the foods that affect patients adversely. At present there is no substitute for the rather clumsy method of dietary trial.

ALLERGENIC DERMATITIS

Many different morphologic types of cutaneous disease have an allergic basis. Several distinct entities are recognized. In contact type eczematous dermatitis the hypersensitiveness appears to be chiefly, if not entirely, in the epidermis; the allergens are often relatively simple chemical compounds which, as a rule but not invariably, reach the skin by direct external contact. The patch test is a reliable and valuable diagnostic aid in this disease. In atopic dermatitis, a condition exists which almost certainly has an allergic basis but concerning which opinions differ so widely that discussion is difficult. A majority of allergists believe that foods and to a less extent inhalants play an important role and that the urticarial cutaneous reactions to these substances are often of etiologic significance. A small but possibly important minority is decidedly skeptical of this statement. Recent investigations on an allergen present in the skin are of great interest but as yet unconfirmed. Urticaria is often caused by allergy to foods, drugs, serums, glandular extracts or other biologic products used in the treatment or prevention of disease. In many cases, however, especially of chronic urticaria, no allergenic excitant is identified, and in such cases one wonders whether partially digested foods are the causes or whether allergens may arise in the patient's own body as the result of allergenic modification of his own tissues (with or without infection), and even whether the hypothetic H-substances which mediate urticarial wheals may, in certain circumstances, arise directly without immunologic prerequisite. There are reasons for believing or at least suspecting, that infestations and infections are causes of urticaria, but there is need for more substantial evidence in many cases. These same problems apply, at least to some extent, to angioneurotic edema, allergic purpura, erythema multiforme, erythema nodosum and other morphologic types of dermatoses. Cutaneous manifestations of allergy to bacteria, fungi, viruses and other micro-organisms are of recognized occurrence.

MIGRAINE

In regard to migraine and so-called allergic headache we know that some attacks are precipitated by the ingestion of foods. In such cases, however, an immunologic mechanism usually cannot be demonstrated, although one may exist. The same questions arise here as in the case of gastrointestinal allergy and urticaria. Since cutaneous tests in migraine are often inadequate, one resorts to diet trial. Other methods of identifying offending foods are under investigation.

TESTS AND TREATMENT

Although generalizations tend toward inaccuracy, the following statements may be made regarding cutaneous tests: Scratch tests are equivalent to intracutaneous tests if made with extracts 1,000 to 5,000 times stronger. Such tests are of great diagnostic value in seasonal hay fever. In bronchial asthma and perennial hay fever they are of much diagnostic value. In gastrointestinal allergy and urticaria these tests are sometimes of limited value, while in migraine they are seldom of much help in diagnosis. In contact type eczematous dermatitis patch tests are reliable and of great diagnostic value. Tests in atopic dermatitis are at present under investigation and discussion. It is understood, of course, that all tests must be carefully controlled and results interpreted and correlated with the patient's clinical history.

The treatment of allergic conditions is, theoretically—but not so often practically—simple. Identify the cause and avoid it if possible. If avoidance is not possible, desensitize and relieve symptoms by the use of drugs. I prefer to use the word, hyposensitization, because desensitization is seldom if ever complete in clinical allergy.

COMMENT

In a number of other diseases further investigations based on the concept of allergy seem to be indicated. These include acute rheumatic fever, chronic arthritis, certain cases of nephritis and hepatitis, Loeffler's syndrome, certain blood dyscrasias, periarteritis nodosa, thromboangiitis obliterans and many infectious diseases, their complications and sequelae.

ABSTRACT OF DISCUSSION

DR. C. JIMENEZ-DIAZ, Madrid, Spain: Some allergies, mainly involving pollens, in which the reactions to cutaneous tests and passive transfer are always positive (reagin allergy), do not produce precipitins in the serum, but in others in which the reactions are negative, doubtful or of multiple and variable positivity, in which the reaction to the Prausnitz-Küstner test is negative, there is the more intense content of specific precipitins; this is the case in food allergy. There are, nevertheless, some cases in which one can sometimes obtain positive reactions to cutaneous tests, sometimes precipitin reactions and sometimes both, for instance, in tests with house dust, fungi, vegetable dust, cereals and insects. Experimental and clinical studies have demonstrated that the precipitins that are detectable with the technic of collodion are not the same that appear in the classic procedure. There are two different antibodies, which have been called macroprecipitins and microprecipitins. The specificity of these reactions have been proved. My co-workers and I are routinely employing this new method.

CLIMATOTHERAPY IN ALLERGIC DISEASES

A Clinical Report

F. B. SCHUTZBANK, M.D.
Tucson, Arizona

Climatic environment is generally recognized as having an important influence on health. From the increasingly large numbers of patients coming to Arizona for asthma and other diseases, it is evident that the medical profession as well as the public is becoming more climate conscious. There is as yet no definite agreement as to just what produces the improvement when a patient changes his climatic environment. Physical or atmospheric factors usually mentioned as having important influences include temperature, barometric pressure, ion content of the air, altitude, humidity, changeableness of the weather, storminess and sunshine, and difference in foliage. Just how any one or combination of these factors can influence such diseases as bronchial asthma is not readily explainable. Empirically it is true, however, that many sufferers are relieved when they move to the subtropical regions of the Southwest, such as Tucson, Ariz. This report is an analysis made on my clinical observations of 150 unselected patients who came to Arizona for their allergies. Included are the first 100 cases reported by me last year.[1]

When a patient is promptly relieved of asthma or other allergic disease after the change of climate is made, it is probable that he left behind something to which he was allergic. That something may be atopic, as an offending allergen in his physical surroundings, or it may be an environmental factor having a nervous or psychic influence that was the trigger mechanism in exciting the symptoms. Frequently unsatisfactory home conditions, especially in children, are important considerations. In any case the allergic symptoms may be the manifestation of a subconscious rebellion or protest in the life of an allergic person. Patients who have left their families or business worries behind them may do well in their new surroundings, where they can relax and rest and perhaps gain a new perspective on life.

Persons who are susceptible to climatic variations such as storminess, humidity and cold will naturally improve in a calm, dry and warm climate. Tucson has an elevation of 2,400 feet above sea level, an unusually stable barometric pressure, little rainfall, very low average humidity and a high mean temperature with an abundance of sunshine. The foliage of the Southwest is quite different from that of the East and Middle West. While many patients lose their hay fever, some experience hay fever for the first time and others have severer hay fever than they had before coming to Tucson. Because of the nature of the climate the pollen season lasts nine to ten months. Persons sensitive to Bermuda grass especially, as well as to some of the tropical pollens, suffer the most. I have noticed in testing that those allergic to timothy, which does not grow in the Southwest, are not necessarily sensitive to Bermuda grass and vice versa.

Because of the dryness there is much dust, and that causes trouble for many persons. Also, the dryness is conducive to inspissation of mucus and, in some asthmatic persons, is responsible for bronchial "plugging." Bronchial cast formation is frequently encountered, and many patients are forced to leave for a less dry climate. Those with excessive secretions may be greatly relieved. The arid climate is also conducive to dehydration, and in cases of acute disease that condition frequently requires immediate treatment.

Patients with infections of the respiratory tract, as determined by examination of the discharges, and a frank bacterial asthma usually get along well after a sufficient length of time has been allowed for the infection to clear. Too many patients expect a quick cure from some long-standing condition. I have concluded that at least a year should be allowed before an unfavorable opinion can be drawn in any particular case. All patients should be advised to receive the treatment that is usually indicated in their case and not to expect the climate alone to effect a miraculous cure. I have given penicillin by injection and aerosol to over 100 patients with infections of the respiratory tract, and the benefits were frequently maintained in the new climate while recurrences were commoner with the same treatment in an unfavorable climate. Many of the patients with infection of the respiratory tract who did not get along well were those who had extensive surgical treatment of the paranasal sinuses resulting in incurable sinusitis and often bronchitis and bronchiectasis.

In the breakdown of the 150 cases, 101 patients were primarily asthmatic; 32 had allergic rhinitis and sinusitis which was often complicated by secondary infection; and 16 had skin allergy, including eczema, neurodermatitis and urticaria. One patient had migraine with urticaria and perennial rhinitis. Of course, many cases came under more than one category.

Of the entire group, 72 per cent were benefited or relieved by climatotherapy and 28 per cent were not appreciably helped. Of the 101 asthmatic patients, 74 were benefited by an estimated 50 per cent or more amelioration of symptoms to complete relief. Of the 74 who were relieved the improvement could be attributed to the avoidance of psychosomatic influences in at least 32 cases and to improvement of infection of the respiratory tract in 26 cases. Escape from some specific atopic offender or offenders accounted for only 10 cases, and miscellaneous or undetermined causes in 6 cases. In considering these percentages one must bear in mind that most of these patients had received the usual treatment in their home cities without benefit before being advised to try climatotherapy, and the percentages given would greatly differ from a similar number of routine cases in the usual city allergy practice.

In the cases in which the condition was attributable mainly to psychogenic causes I do not mean to imply that sensitivity to various allergens played no part at all. From clinical observations it would seem that the allergic threshold is lowered during periods of emotional strain and that persons sensitive to certain allergens could not tolerate the offenders at such times. But when they were removed from their emotionally disturbing influences they had no symptoms and could then tolerate the previously offending foods or inhalants. Such persons have an underlying inherited allergic constitution which manifests itself during periods of nervous and mental strain or fatigue. Contact with an allergen is not essential. Emotional disturbances, the same as irritating gases or sudden temperature changes, can incite an attack of asthma by stimu-

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lating the previously established neuromuscular pathways into activity. When the patients are helped by change of climate they are merely getting away from the causes of their nervous or emotional instability. Many persons are potentially "allergic" and, as demonstrated during World War II, experience symptoms only when under strain. This was illustrated by one of my patients who frequently had asthma when the stock market went down and who improved when the market went up.

Of the 27 patients with asthma not helped, 14 had chronic infection of the respiratory tract, such as sinusitis and bronchitis or bronchiectasis, that was not amenable to treatment. The patients who had extensive sinus surgical treatment did poorly as a rule and were the most difficult to treat. Other failures were in part due to complications such as emphysema, bronchiectasis or cardiac disease. Three patients had periarteritis nodosa. Two of these died, and the third was near death at the time of writing. Not included in the series were 8 patients with active pulmonary tuberculosis discovered in routine sputum examinations of asthmatic patients, 2 patients with previously undiagnosed carcinoma of the lung with asthmatic symptoms and 7 patients with cardiac decompensation; all of these patients were sent to Arizona for bronchial asthma.

REPRESENTATIVE CASES

CASE 1.—A woman of 30, married five and one-half years, came to Tucson for intractable asthma of five years' duration. In her home town elimination of foods to which she had had positive reactions, treatment with vaccines, various medicines and diets afforded no relief. After six weeks in Tucson she was symptom free and all treatment was stopped. For the next five months she had no asthma and enjoyed excellent health. Five days after she returned to her home in the East she had to be hospitalized for asthma. On her return to Tucson the condition again cleared up completely for three months. Her husband then decided to move and be with his wife. Five days after his arrival in Tucson I had to hospitalize her in status asthmaticus. On inquiry I learned of their marital difficulties. Subsequently a divorce was obtained, and she now lives in the East and has no asthma.

CASE 2.—A bright little girl of 10 was sent to Arizona for severe asthma and eczema of one year's duration. She was so ill on arrival that she had to be hospitalized. Sent with her were three vials of vaccine, numerous medications, diets and pages of instructions. Two months after entering a private school she was free of all symptoms, taking no medication, eating the general school diet and doing most of her "don'ts," such as playing with animals. In three months she gained 12 pounds (5 Kg.). At vacation time she went home, and in less than a week she had to be hospitalized. On her return to Tucson the condition cleared up rapidly. An investigation revealed that the child's mother had died three years previously; eighteen months later the father had married a widow who also had a 10 year old daughter. The patient did not get along well with her stepmother and stepsister, and after a few months of very unhappy life she began having asthma and eczema. During her second year in Tucson the parents visited her; with the school's permission the girl was allowed to stay with the parents at their hotel. On the second day the child was wheezing. After the parents left the condition cleared up quickly.

CASE 3.—A 12 year old boy lost his asthma even before he reached Arizona. He was symptom free for nine months and then returned home. He had asthma the first night and four days later was so ill that he was sent back to Tucson. Again he was symptom free. Six months later the family moved to Arizona. The furniture followed, and the first night the lad slept in his old bed he had asthma. Investigation proved he was allergic to the horse hair mattress.

CASE 4.—An 11 year old boy was sent south because of perennial rhinitis, sinusitis, bronchitis and asthma. All treatment at home had been ineffective. He was found sensitive to several important foods, which were eliminated from his diet. After a course of penicillin by injection and aerosol the infection cleared, and the improvement was maintained with an autogenous vaccine and vitamin therapy. After six months' freedom from all symptoms he returned to his home in the East. He soon caught a cold, and all of his former trouble returned. After coming back to Tucson he was brought under control again, and for the year and a half prior to writing he had remained in good health.

CASE 5.—A totally disabled man of 60 gave a history of bronchitis and asthma for over twenty years. He was finally given diagnoses of emphysema and bronchiectasis and was sent to Arizona as a last resort. He coughed and wheezed incessantly and smoked about 60 cigarets a day, which he said "loosened the phlegm." After a year in Tucson he was not improved and sought medical aid. Results of cutaneous tests were essentially negative. Very unwillingly he gave up smoking and received a thorough course of penicillin therapy. He was greatly improved in six weeks and after three months was practically free of symptoms. He could walk a mile, while previously he could hardly walk across the room. He went home recently, and I believe that if he does not smoke he will remain in good condition.

CASE 6.—A woman of 67 had asthma for the first time in her life one year before being sent to Arizona. I saw her soon after her arrival; she was orthopneic and cyanotic and was wheezing loudly. Examination revealed that she had pitting edema of the legs, an enlarged liver and pulmonary edema. After treatment with oxygen, digitalization, diuretics and three weeks of rest she was symptom free and returned to her home.

COMMENT

In this series, 11 patients experienced hay fever for the first time in their lives, 8 had severer hay fever than before and 15 who formerly had hay fever had no symptoms of pollinosis in Tucson. The greatest single offending pollen was Bermuda grass, and the season in which it is present is approximately eight months long.

Most of the patients with eczema, urticaria and neurodermatitis improved in Tucson, although patients susceptible to quick changes of temperature may not do well because of the pronounced diurnal variation of temperature. During the winter months there is often as much as 50 degrees or more between the day and the night Fahrenheit readings.

SUMMARY

An analysis is made of 150 patients who came to Tucson, Ariz. for climatotherapy of allergic disorders. Seventy-two per cent were benefited, and 28 per cent were not helped. Of 101 asthmatic persons, 74 were benefited from 50 per cent to complete relief of symptoms. Of the 74 asthmatic persons benefited the improvement could be attributed to their getting away from psychosomatic influences in 32 cases and to improvement of chronic infection of the respiratory tract in 26 cases. Patients with chronic sinusitis and intrinsic bacterial asthma who had had extensive sinus operations did poorly as a rule. Eleven patients experienced hay fever for the first time, and 8 had severer hay fever than they had had before coming to Tucson. Fifteen patients who had formerly had hay fever had no symptoms of pollinosis in Arizona.

CONCLUSION

Climatotherapy is justified in selected cases of allergy only after the patient has been given the benefit of a complete study, including, in addition to a thorough

history, examination and skin testing, an investigation of his physical and psychic environment. Psychogenic factors are important causes in exciting allergic manifestations, and if this is kept in mind more patients can be successfully treated at home and fewer will be sent away for climatotherapy. The dry climate with its excessive dust may not agree with some patients. Too many patients are pathetically disillusioned and put to great financial hardship by needlessly being sent away for climatotherapy, because of incomplete allergy studies of their cases. Older patients and those with chronic infection of the respiratory tract are often greatly helped by moving to a warm dry climate. Those aggravated by cold, high humidity, storminess and rain may be benefited by climatotherapy. Persons sensitive to pollen and dust should be carefully considered before they are advised to change to the Southwestern United States for any allergic disorder. When a patient is advised to change his climatic environment he should be told that it may take as long as a year or more to gain the desired improvement and that it is advisable to receive or continue recognized methods of treatment and not to depend on the climate alone to effect a magic cure.

ABSTRACT OF DISCUSSION

Dr. O. E. Egbert, El Paso, Texas: Arid climate has specific influences on some types of allergy, principally allergic rhinitis and bronchial asthma and such complicating conditions as sinusitis, sinobronchitis and bronchiectasis, which, I think, overshadow the psychogenic reactions emphasized by Dr. Schutzbank in patients coming from the East and North to the Southwest. In 1936 I mentioned in a paper on sinobronchitis the instability of mucous membranes that become boggy with edema and secrete large quantities of mucus in the moist climate and that become dry and atrophic in the event the patient moves to an arid climate. The relief from the edematous swelling of the turbinates improves aeration and makes possible adequate drainage from the several sinuses. This drying out of the turbinates may go to a vicious extreme, permitting the air to enter the trachea and the rest of the bronchial tree too dry, too cold and with no filtering of such extraneous matter as dust, molds and pollens. Then there are the patients with intractable asthma that, in the humid, cold climates, have great difficulty with mucus. Rackermann, Cooke and others consider mucus the major problem of intractable asthma. Many persons experience dramatic reverse of their disease when they move to the dry climate. Bronchial mucus is diminished, the edema of the bronchial mucus membranes disappear, mucous plugs and casts are thrown out and great relief comes from improved aeration, whether or not bronchospasm still prevails. Just as a vicious problem can develop from dry atrophic mucous membranes of the upper air passages, the bronchial tree may become too dry and the dry asthma can be a severe and persistent problem. I have seen deaths occur in this group. However, as a rule they are not the emergencies that can arise from the problem of mucus in the moist climates.

Dr. Marion B. Sulzberger: The observations in cases of atopic dermatitis are so similar to those in asthma that one might almost say that this dermatosis is really a sort of asthma of the skin. Given the differences which depend on the structural and functional differences in the organs affected, atopic dermatitis, by and large, acts like asthma. The results in cases of severe intractable disease, that have resisted almost every therapeutic approach for years, are similar in atopic dermatitis and in asthma. When persons with atopic dermatitis are transferred to dry climates, like that of Tucson or El Paso, about 50 per cent of the patients get more than 50 per cent improvement. That type or degree or regularity of improvement from changes to other environments, even though all the psychic changes, emotional factors, are equally changed by such transfers. My statements are based largely on my own experiments in environmental changes. I am inclined to infer that there is something beneficial in the dryness itself, in the almost constantly low relative humidity. Other changes must also play a role, for example, the removal from certain environmental allergens, the taking away of dust and irritants and perhaps, to some degree, the removal of certain emotional tensions. But, in trying to understand why asthma and atopic dermatitis act so similarly in response to climatic changes, it is logical to postulate that the bronchi and the mucous membranes of the lungs and skin should be precisely those organs which are most strongly affected by low relative humidity, because these two are precisely the organs through which the human body gets rid of water by giving it off to the air. All extrarenal water loss is accomplished mainly by the skin and, to a lesser degree, by the surfaces of the lungs through the expired air. Therefore, if there is no gradient between the relative humidity of the environmental air and the cutaneous surface and lung surface, the skin and lungs have difficulty in losing water and their surface tissues tend to become waterlogged. At the New York Skin and Cancer Unit and the New York University-Bellevue Medical Center University Hospital, my colleagues and I have been studying this phenomenon in relation to the skin and its diseases. My co-workers have described a "sweat retention syndrome," which includes alterations of the skin which can well account for some of the itching bouts in cases of atopic dermatitis. While our studies have made progress, it may be that the benefits achieved through environmental and climatic changes cannot be studied properly until one has completely air-conditioned rooms in which not only could one change at will the temperature and relative humidity but one could at will blow in different dusts and change the environmental allergens, irritants and emotional constellations. Only after that would one be able to find out which of these factors is important, how they range in relative importance and just how each can act.

Dr. Leon Unger, Chicago: Dr. Schutzbank gave about as fair a report of the conditions in the Southwest as anybody could possibly do. He was extremely critical of the results, and I think his conclusions were sound. I feel sorry for some of the doctors in the Southwest who get the patients we failed to cure. Some of them should go there, but most of these patients go of their own volition, and as they come to the border of Arizona they expect that their asthma or sinus trouble will disappear. Of course, this is not always true. A number of my patients went to the Southwest last winter, and a few seemed to get better. A good many of them had no results whatever. The trouble with the patients who are sent to the Southwest is that most of them have such complications as severe emphysema, cor pulmonale and/or bronchiectasis, and we in the North cannot expect the doctors in Arizona and Texas to perform miracles. I agree with Dr. Schutzbank about the psychic aspects. Some of the patients are distinctly benefited by getting away from their home environments, from their parents, perhaps, and the rest of the family, and this has been proved, too, in Colorado, where the climate is entirely different from that in Arizona. A great many of the children who are sent to the National Jewish Home for Asthmatic Children in Denver are improved immediately. A strong psychic element is frequently present in their Eastern home environments. One should send those patients who have asthma or rhinitis after infectious "colds" and bronchitis. My colleagues and I are rather well convinced, after thorough study from an allergic point of view, that many of these cases are not due to allergies alone, but are complicated by infections. Those patients should do well in the Southwest. In addition, mild cardiac cases may be benfited by removal to the Southwest.

Dr. Stanley F. Hampton, St. Louis: No doubt many patients with intrinsic asthma of the bacterial allergy type (infective asthma) enjoy better health in the dry climates, such as in the Southwest. It appears to me that persons with intrinsic asthma based on factors other than bacterial sensitivity are among those who fail to obtain benefit from residing in a

dry climate. The excellent work of Cavelti and Cavelti in demonstrating autosensitivity in relation to nephritis in lower animals suggests that these cases of probable nonbacterial intrinsic asthma may well be based on autosensitivity of bronchial tissue. It would be reasonable to assume that climate would have no effect on such conditions. Probably the variations in result of climatotherapy in asthmatic persons will not be explained until the true cause of intrinsic asthma apparently not based on bacterial allergy is proved.

DR. J. A. RUDOLPH, Miami Beach, Fla.: I should like to commend Dr. Schutzbank for accurately stressing the diagnostic phase of this problem. It is most important that we remember to be doctors first and specialists second, since many patients that visit the doctor before going West have problems other than asthma, and with accurate diagnosis they frequently need not make the trip. My experience also includes many years of practice in the North, and it has been proved to me many times that when a patient desires to go to Arizona, there is little that the physician can exert to alter that desire. I tell that patient to go to see what the change in climate will do. My patients who have gone to Arizona have not been greatly benefited. However, I believe that a certain selected group of patients will get along well in the dry climate, and, as Dr. Egbert stated, it is the excessively mucoid or mucous type, or the moist type, of disease that will respond well. In Southern Florida there are patients with such severe asthma that I call them allergic emergency patients, because most of them present far severer medical problems than those that I have seen in the North, and they no longer require cutaneous tests or ordinary allergic care; they require emergency treatment because so many are in a constant status asthmaticus and the usual treatment is no longer effective. Drugs such as ephedrine, epinephrine and potassium iodide no longer work on these patients, and injections of aminophylline given intravenously no longer give relief. However, as Dr. Rackemann pointed out, one must endeavor to control the asthma and not permit the asthma to be in control. The majority of asthmatic persons who come to Florida do not improve, in my opinion, because of the climate. The humidity in that part of the country at certain times of the year is high; however, if a patient has an excessively atrophic or dry type of mucous membrane, he will often improve in Southern Florida. If the patients are subjected to both general medical and allergy studies, it is my firm conviction that the percentage of patients with intractable asthma who will find it necessary to leave one section of the country for another would decidedly diminish. In addition, one should not neglect the bedside manner in its effect on this group of patients, or, in up-to-date parlance, practicing psychosomatic medicine, for those who remain home. If one can convince such persons that a psychiatrist is of value, the psychiatrist may also assist in further reducing the number of patients who go to the Southwest or the South.

DR. F. B. SCHUTZBANK, Tucson, Ariz.: It surprised me to hear an allergist say that he does not believe in the existence of or has never seen bronchial plugging. Not long ago a new patient presented himself at my office in dire distress from bronchial asthma. In addition to the usual dose of epinephrine given subcutaneously, he was given 20 cc. of aminophylline intravenously. Apparently the intravenous injection was given a little too rapidly, because it caused some violent vomiting and coughing and the patient brought up a large Y-shaped plug. It was firm and rubbery and could have been sliced. Needless to say, the patient was relieved for the first time in months. I agree with Dr. Egbert that in many cases of intractable asthma the treatment of dehydration is of utmost importance, especially in warm climates. In addition to hydration, one should use adequate doses of iodides to aid in expectoration of the mucus. It has been well brought out that there is no utopian climate for chronic asthma. Some patients with excessive secretions or those whose condition is aggravated by high humidity may get along well in a dry warm climate, while some require a moist climate. In others, climate may play no part at all. A thorough investigation of every patient's sensitivities, as well as a study of the psychosomatic factors, will avoid unnecessary climatotherapy.

CONGENITAL DERMAL SINUSES

As a Cause of Meningitis, Intraspinal Abscess and Intracranial Abscess

LESTER A. MOUNT, M.D.
New York

Congenital dermal sinuses are dermal tubes which extend inward from the surface for varying distances and frequently connect the central nervous system or its coverings with the surface of the body. The inner end of the sinus may be expanded to form a dermoid or epidermoid cyst. They are the result of incomplete separation of the epithelial ectoderm from the neuroectoderm at the fourth week of fetal development. On examination, a small dimple or a pinpoint sinus may be found in the midline at any point from the occipital to the sacral regions, inclusive. The dimple or sinus opening may be surrounded by a hair, a pigmented area or a capillary hemangioma. Hair or sebaceous material may project from the small opening at the bottom of the dimple. Often a cordlike structure is palpated, extending inward from the opening. Local superficial or deep infection may be present around the site of the sinus. There is limitation of movement of the spine in the involved area. Spina bifida or grooving of the upper or lower surface of a single spinous process is often present, but the vertebrae may be normal. Through these sinuses bacteria enter and produce infection in the meninges, in the spinal cord and in the brain, as well as in the subcutaneous tissues or erector spinae muscles.

CONGENITAL DERMAL SINUS AS CAUSE OF MENINGITIS AND EPIDURAL AND SUBDURAL ABSCESSES

Historical Review.—Moise [1] in 1926 reported the first case, that of a boy 18 years of age, with meningitis and a discharging sacral sinus which was found to pass through a defect in the sacrum and end blindly beneath the dura. In 1928, Ripley and Thompson [2] described the fatal case of a boy, 3½ months old, with meningitis and a discharging sacrococcygeal sinus which was found to enter the sacral canal through the region of an absent second sacral arch. The sinus communicated with the subarachnoid space. In 1928, Sharpe and Sharpe reported the case of a boy,[3] aged 3 years, who had a draining sinus which extended inward through a defect in the lamina of the eleventh thoracic vertebra and ended between the dura and the left side of the spinal cord in an inflammatory mass of caseous material containing hair. In 1933, Hipsley [4] published the case of a 3 year old girl with a discharging, hair-containing sinus over the first thoracic spine. There was induration about the sinus. It extended through a defect at the base of the bifid second thoracic vertebra and ended subdurally in a dermoid cyst.

Walker and Bucy [5] in 1934 reported 3 cases. The first was of a girl 5 years of age who had had an

From the Department of Neurological Surgery, Columbia University College of Physicians and Surgeons and the Neurological Institute of New York.

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episode of meningitis at the age of 6 months and an intermittently discharging dimple in the upper thoracic region immediately preceding and following that time. The dimple was discovered to be the distal end of a dermal sinus which extended into the spinal canal through a defect in the lamina of the fourth thoracic vertebra, the spinous process of which was missing. The sinus ended above the dura in an inflammatory mass composed of numerous small abscesses which extended through the dura and attached to the dorsal surface of the spinal cord.

The second case was that of a 3½ year old girl who had had meningitis one year previously. There was a red, hairy nevus over the fourth lumbar spine, and a dermal sinus extended from the center of this between the spines of the fourth and fifth lumbar vertebrae through the dura and ended in an abscess in the subarachnoid space. Near the superior end of the abscess, the cavity seemed to sink into a hole in the dorsal surface of the spinal cord.

The third case was of a 3 year old girl with a tender, intermittently discharging, hairy, pigmented area in the midline at the level of the fifth lumbar spine. The opening of the dermal sinus was in the center of the pigmented area. The sinus extended through a defect in the bifid spinous process of the fifth lumbar vertebra and ended in an inflammatory mass beneath the dura.

Stammers [6] in 1938 described 2 cases. The first was of a boy of 2 years with low grade meningitis, secondary to a dermal sinus which extended from the surface of the upper sacral region through a bifid fifth lumber vertebra to communicate with a dermoid cyst in the spinal canal. The second case was of a boy 4 years of age with meningitis and a discharging sacrococcygeal sinus which was attached to the dura.

Boldrey and Elvidge [7] in 1939 reported on a 2½ year old boy with meningitis and epidural and subdural abscesses, secondary to an intermittently discharging dermal sinus which extended from a pigmented area in the lumbosacral region through a bifid fifth lumbar vertebra to end in an infected subdural dermoid cyst.

List [8] in 1941 added the case of a child of 7 with Escherichia coli meningitis, and epidural and subdural abscesses, secondary to a dermal sinus in the lumbosacral region. In 1942, O'Connell [9] published the case of an 18 month old child with meningitis, secondary to a dermal sinus which extended from a small depression in the center of a port-wine stain in the lower lumbar region through a defect in the neural arch of the fourth lumbar vertebra and communicated with a subdural abscess. Waring and Pratt-Thomas [10] in 1945 reported 2 cases. The first was that of a girl 10 years old with recurrent episodes of Staphlococcus aureus meningitis, secondary to a dermal sinus which extended from the surface through a defect in the fifth lumbar vertebra and communicated with an epidural abscess. In the second case, the sinus extended from the center of a pigmented area at the third lumbar vertebra downward to the dura through a defect in the vertebra.

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REPORT OF CASES

Case 1.—The patient was a 2½ year old girl who was admitted to the hospital because of intermittent episodes of stiff neck, tenderness in the lower part of the back, vomiting and fever. Birth was apparently normal, and a small red area in the lumbosacral region was noted at that time. On several occasions, this area had been mounted by a small pustule which disappeared without sequelae and no persistent drainage. There was no fever at these times. She had had several febrile episodes which were thought to be due to tonsillitis. Seven weeks before her admission the patient had a fever (102.6 F.) and vomited, and her mother noticed that the child had pain whenever the lower back was touched. These symptoms disappeared in one week. On the day before her admission, fever developed and again the mother thought the child had tonsillitis. On the morning of admission the child had severe pain when the lower back was touched; swelling appeared in the region under the reddened area, and she dragged the left leg in walking.

Examination showed a well developed and nourished white child with flushed cheeks and hot skin. Her temperature was 102.4 F., pulse 136 and respirations 40. There was a slight mucous discharge from the nose; the tonsils were enlarged and congested. There was a postnasal drip. The left ear drum membrane was injected, but a light reflex was present. There was an indurated, nonfluctuant, very tender swelling in the lumbosacral region which measured 7 by 4 cm. The reddened area was at the apex of the mass, and in the center of this was a sinus, but no material escaped from it. Results of the general physical examination were not remarkable otherwise. Neurologic examination showed stiffness of the neck and the presence of Kernig's sign. The left knee jerk was absent, but both ankle jerks and the right knee jerk were normal. There were no sensory changes. The left lower extremity showed some weakness.

Laboratory studies showed a hemoglobin concentration of 10.8 Gm. (78 per cent), 4,260,000 red blood cells, 14,500 white blood cells, 55 per cent polymorphonuclear leukocytes, 40 per cent lymphocytes, 3 per cent monocytes and 2 per cent eosinophils. Urinalysis revealed a specific gravity of 1.020 and an acid reaction. There were a plus reaction for albumin, no glucose and a few white blood cells.

Course in the Hospital.—An attempted lumbar puncture at the region of the third and fourth lumbar vertebrae above the tender area showed pus in the spinal canal. She was operated on the day after admission, and paravertebral and subdural abscesses were found, incised and drained. An epithelium-lined tube passed downward from the opening on the surface between the incompletely fused lamina of the fifth lumbar and first sacral vertebrae and entered the dura. It was completely removed. Laminectomy of the fourth and fifth lumbar and first sacral vertebrae was performed; the dura was opened, and a subdural abscess which extended more to the left side of the spinal canal was seen. The wound was packed open with penicillin-soaked (1 cc. = 250 units) gauze. A small catheter was placed in the center of the packing, and 5 cc. of penicillin was inserted twice daily. Sulfadiazine and sodium bicarbonate were given by mouth for three days. Twenty thousand units of penicillin was given intramuscularly every three hours for two weeks. Diphtheroids only could be cultured from the abscess. The stiffness of the neck and the Kernig sign disappeared on the second postoperative day. The wound rapidly showed clean, fresh granulation tissue, and a secondary closure was performed on the eleventh postoperative day. The wound healed rapidly after the secondary closure. The strength was normal following the first operation. She was discharged from the hospital sixteen days after the second operation, entirely normal.

Pathologic Report, Microscopic.—The specimen consisted of the wall of a sinus lined on its internal surface by squamous epithelium which was undergoing cornification. Outgrowths of this epithelial lining partially filled the lumen of the cavity. Surrounding the epithelial lining was a mass of coarsely fibril-

lar, relatively acellular connective tissue. Beyond that there were fat, fibrous tissue and blood vessels. A second specimen consisted of another portion of the sinus which was only partially transected in this zone. Here the subepithelial connective tissue was infiltrated by lymphocytes and plasma cells.

Comment.—The course of events was entry of organisms into the dermal sinus and subsequent infection, starting, first, inside the sinus and then spreading to form an abscess in the sacrospinalis muscles just posterior to the lamina and another in the subdural space. From the subdural abscess there was some leakage into the subarachnoid space, with the production of meningitis. The episode of fever seven weeks before the patient's admission was probably the result of similar spread, with later walling off of the subdural abscess and recovery from the meningitis.

CASE 2.—The patient was a 2 year old boy whose complaints were draining "sebaceous cyst" of one year's duration, intermittent attacks of meningitis of eight months' duration, difficulty in micturition of three months' duration and weakness in the lower extremities lasting one month.

Examination showed a granulating, draining area in the midline at the fourth lumbar vertebra and stiffness of the lumbar spine, weakness of both lower extremities and hyperactive deep tendon reflexes in the left lower extremity, with the presence of Babinski and Chaddock signs. The right knee kick and hamstring reflexes were normal; the right ankle jerk was absent.

Roentgenograms showed that six lumbar vertebrae and the arches of the fifth and sixth vertebrae were incompletely fused.

At operation the dermal sinus was seen extending from the granulating area between the spinous processes of the fourth and fifth lumbar vertebrae through the dura and ending in an infected epidermoid cyst in the subdural space. The roots of the cauda equina, and perhaps a low-placed spinal cord, were compressed by a subdural abscess which extended from the second lumbar vertebra to the sacrum. The wound was packed open, using china silk and packing saturated with penicillin, 1,000 units per cubic centimeter. The patient was given penicillin intramuscularly. The wound gradually healed. Six months after operation the patient's only residual sign was a slight weakness in dorsiflexion of the right foot.

CONGENITAL DERMAL SINUSES AS A CAUSE OF INTRAMEDULLARY ABSCESS OF THE SPINAL CORD

Historical Review.—Shenkin, Hunt, and Horn [11] published the case of a 22 month old child with a sacrococcygeal dermal sinus in direct continuity with an abnormally patent and dilated filum terminale. The latter was in continuity with the central canal of the spinal cord. An intramedullary abscess of the spinal cord and purulent meningitis developed.

REPORT OF CASES

CASE 3.—The patient was a 10 year old white girl who, seven months before her admission, began to have sharp, knife-like pains in her back, running around the chest under the left breast and sometimes radiating down and anteriorly above the umbilicus. These pains were greatly aggravated by coughing, sneezing, laughing and straining at stool. The pains would last for a few seconds and then disappear abruptly. Analgesics helped considerably. Three months after the onset, the pains were followed by burning and itching in the same areas. At that time also severe pains occurred in the lower extremities, especially in the calves. These leg pains far overshadowed the others in severity and caused the child to scream in agony. They were worse after standing or walking a long time. Massage seemed to relieve the pains to some degree. Five months after the onset, she began to have numbness of the left foot, to drag her feet and to have difficulty in maintaining her balance. One month later she could not walk unaided and on her admission could barely move her toes. For one week she had had frequency and urgency and, for twenty-four hours, incontinence of urine. The parents had observed a small dimple between the scapulas since birth. A year before her admission to the hospital a physician had expressed some caseous material and a few hairs from the sinus.

Examination showed a well developed and nourished white girl in evident distress because of pain in the back and left side of the chest and tenderness of the left breast. Her blood pressure was 110 systolic and 70 diastolic. There was decided tenderness over the spinous process of the fourth thoracic vertebra, and pressure over it produced pain which radiated around the left side of the chest. The patient would not lie on her back because of precipitation of the pain. The opening of a sinus, 1 mm. in diameter, was seen between the spinous processes of the fourth and fifth thoracic vertebrae and two hairs were projecting from it. Beneath the opening a cordlike structure could be palpated passing inward. Clonic movements of both lower extremities, more pronounced on the right, were elicited by touching the legs, knees or feet. There was spasticity of all the muscles of both lower extremities, and the only voluntary movements possible were slight wiggling of the toes. The deep tendon reflexes in both lower extremities were decidedly hyperactive, and a bilateral Babinski reflex was present. There was a sensory level to all modalities at the third thoracic segment bilaterally, with anesthesia below and hyperesthesia above, to and including the first thoracic segment bilaterally.

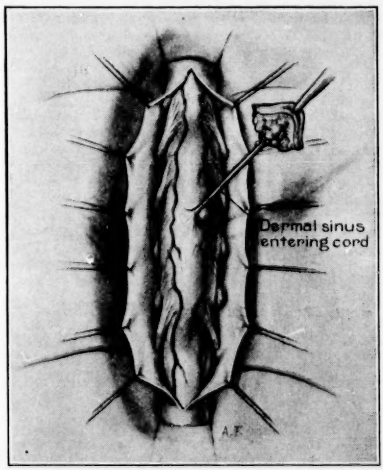

Fig. 1.—As seen at operation, the dermal sinus is shown entering the distended spinal cord.

On laboratory examination, the urine showed white blood cells and bacteria. The blood count revealed a hemoglobin content of 11.9 Gm. (82 per cent); 4,340,000 red blood cells, 7,800 white blood cells, 74 per cent polymorphonuclear leukocytes, 22 per cent lymphocytes, 3 per cent monocytes and 1 per cent eosinophils. Roentgenograms of the thoracic spine showed a congenital irregularity of the lamina of the fifth and sixth thoracic vertebrae, and possibly of the seventh. The pedicle of the fifth thoracic vertebra on the left side was indistinct. This was believed to be due to rotation and motion. The paraspinal soft tissues were not widened.

Course in the Hospital.—The child was admitted and operated on immediately. The dermal sinus was 5 mm. in diameter. Through the opening on the skin surface, hair was protruding and sebaceous material could be expressed. The sinus led down to the dura, passing between the spinous processes and the

11. Shenkin, H. A.; Hunt, A. D., Jr., and Horn, R. C., Jr.: Sacrococcygeal Sinus (Pilonidal Sinus) in Direct Continuity with the Central Canal of the Spinal Cord, Surg., Gynec. & Obst. **79**: 655, 1944.

lamina of the fourth and fifth thoracic vertebrae. The upper portions of the fifth spine and lamina were grooved by the sinus. The sinus led through the dura into the spinal cord At the point where the sinus passed from the dura into the cord, the dura was firmly adherent to the cord. These could not be separated, and, when the sinus was excised, a small portion of the dorsal part of the cord had to be removed. This, however, seemed to represent the wall of an abscess. The abscess was within the spinal cord and contained thick, creamy, yellow pus. It was approximately 1 cm. in diameter and ended blindly anteriorly, superiorly and inferiorly. The spinal cord itself was markedly distended and completely filled the spinal canal. It was enlarged throughout the exposed area from the lower portion of the lamina of the seventh cervical vertebra to the upper portion of the lamina of the seventh thoracic vertebra. It was enlarged above and below this area, but there was sufficient decompression performed so that the spinal cord did not fill the canal at the upper and lower portions of the wound. The subarachnoid space was completely obliterated from the second to the sixth thoracic vertebrae by the enormous distention of the cord; hence the subarachnoid space was not entered. Both penicillin, 1,000 units per cubic centimeter, and sulfadiazine powder were used

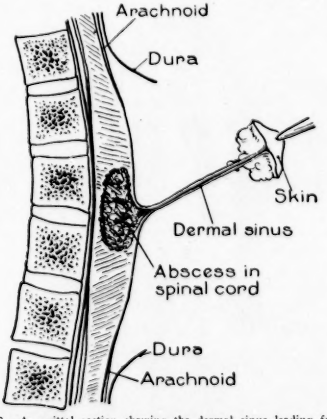

Fig. 2.—A sagittal section showing the dermal sinus leading from the skin into the abscess within the spinal cord.

in the wound after the evacuation of the pus, and the dura was left open. Penicillin, 20,000 units, was given intramuscularly every four hours for the first six postoperative days. On the first day, 15,000 units of penicillin was given intrathecally in 10 cc. of distilled water; 2.5 Gm. of sodium sulfadiazine was given intravenously daily for the first three days. Sulfadiazine was then given by mouth until the seventeenth postoperative day. E. coli was cultured from the abscess.

The patient's postoperative course was febrile but a urinary tract infection developed. The operative wound healed by primary intention. She was allowed out of bed on the twelfth postoperative day and was discharged from the hospital on the thirty-eighth postoperative day. She was then completely free of pain. She was able to walk with slight assistance and had regained effective bladder and bowel control. When last seen, 21 months after operation, she had no pain. She had normal bladder and bowel function. She had only slight unsteadiness in walking and could run and ride a bicycle. There was a kyphosis in the upper thoracic region. Strength was normal. The heel to knee test was well performed. Muscle tone and the deep tendon reflexes were slightly increased in the lower extremities. The Babinski and Chaddock reflexes were present on the right and equivocal on the left. Pain, temperature, touch and position sense was normal. Vibration was absent below the third lumbar vertebra.

Pathologic Examination.—There was a tube of squamous epithelium actively desquamating, which lined the wall of a cavity. Beneath this epidermal lining was a layer of dense connective tissue representing the dermis, in which hair follicles and sudoriferous glands were observed. Directly beneath this epidermis was a mild infiltration by lymphocytes with a proliferation of fibroblasts and capillaries in some areas. One of these masses of granulation tissue included a multinucleated giant cell. Among the fibroblasts were some cells which resembled epitheloid cells. The remainder of the dermis and subcutaneous tissue showed no unusual features except occasional foci of lymphocytic infiltration with rare polymorphonuclear leukocytes and some plasma cells. A series of additional sections revealed some psammoma bodies in the dense connective tissue beneath the dermis. This would indicate meningitis associated with the sinus.

Comment.—The result was remarkable, considering the presence of an E. coli abscess within the spinal cord. The operator had anticipated serious residual disturbances, at least in position sense and vibration. The extreme distention of the cord with the obliteration of the subarachnoid space prevented the development of meningitis. The abscess developed within the spinal cord without any purulent drainage from the external opening of the sinus.

CONGENITAL DERMAL SINUSES AS A CAUSE OF INTRACRANIAL ABSCESS

Historical Review.—No previous cases have been reported.

REPORT OF CASES

CASE 4.—This patient was a 1 year old white girl who was admitted after three previous hospitalizations. On her first admission, at the age of 1 month, the patient had hemolytic Staph. aureus meningitis and acute otitis media on the left. A soft tissue swelling, 1 cm. in diameter, with a dimple at the apex was observed in the region of the right external occipital protuberance, but no opening was found in the dimple and no defect was seen on the roentgenogram. The patient recovered following administration of sulfadiazine by mouth and penicillin intramuscularly and intrathecally. Bilateral mastoidectomies were performed, but no evidence of infection was found. At 9 months of age she was admitted for treatment of acute bronchitis. At 10 months the area in the back of the head became tender and pus drained through an opening in the dimple. At 11 months she was again admitted because of acute, purulent otitis media, bilateral. At 12 months she had a fever (103 F.), draining left ear, vomiting, cough and running nose, but she improved when a myringotomy was performed. A few days later the right ear flared up and was opened also. She was readmitted for treatment of otitis media and adenoidectomy. The elevation in temperature subsided with administration of sulfadiazine by mouth and penicillin intramuscularly. Three days later the adenoidectomy was performed. Penicillin was continued and the temperature remained down, but the child became irritable, cried whenever the head was touched and seemed to prefer lying on the right side with the neck hyperextended. Seven days after the adenoidectomy, a lumbar puncture was performed, but the pressure was not recorded. The fluid contained 5 white cells and 45 mg. of sugar per hundred cubic centimeters, and the culture was negative. Eleven days after the adenoidectomy, the patient became extremely lethargic, vomited four times and showed definite opisthotonos. There was no rise in temperature.

Examination showed an acutely ill baby. She moved all extremities well when stimulated and reacted to painful stimuli equally well bilaterally. The deep tendon reflexes were moderately hyperactive. The pupils had been dilated with atropine and did not react to light. There was no papilledema. When turned on her side, opisthotonos was present. The anterior fontanel was bulging and tense. A dimple was observed in the region of the external occipital protuberance, and a cordlike structure was palpable beneath the scalp, leading from the dimple into the bone. Roentgenograms of the skull showed an oval defect in the midline in the occipital bone about 2 cm.

below the external occipital protuberance. A preoperative diagnosis of congenital dermal sinus with secondary cerebellar abscess was made.

A ventriculogram showed both lateral and third ventricles to be markedly dilated, but not displaced. The aqueduct was cut off at its midportion and was displaced forward. A midline

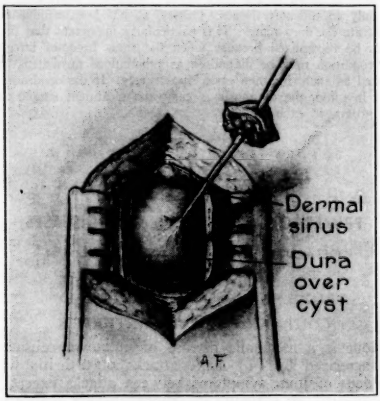

Fig. 3.—The dermal sinus is shown entering the dura in the posterior fossa.

incision was made in the suboccipital region and the sinus was followed inward where it entered the bone at the external occipital protuberance. It then passed downward for 1 cm. between the inner and outer tables of bone before it passed through the inner table. It then entered the center of a rounded elevation of dura 2 by 1.5 cm. It was at this point that the defect in the bone showed in the roentgenogram. There remained only a thin shell of the outer table over this elevation. The bone was removed down to the foramen magnum and the dura was opened but the arachnoid was left intact. It was found that the sinus ended in an infected dermoid cyst, measuring 3 by 2 by 2 cm. and containing hair, pus and caseous material. Leading anteriorly from this was a midline cerebellar abscess which measured 5 by 3 by 3 cm.. The cyst was completely removed; the abscess was drained; the cavity was filled with penicillin (1 cc. = 500 units). A small catheter was left in the abscess cavity, and the wound was sutured, leaving an opening around the catheter for drainage.

The patient stood the operative procedure well. Penicillin was given intramuscularly and was also instilled into the abscess cavity via the catheter. There was clear drainage on dressing (penicillin). The postoperative course was satisfactory until the morning of the third day, when the patient was found dead.

Permission for an autopsy of the head only could be obtained, and this did not reveal the cause of death. There was no evidence of herniation of the cerebellar tonsils, no meningitis and no pus was present within the abscess cavity.

The microscopic sections showed a sinus tract lined with squamous epithelium, which was actively desquamating. In the dense connective tissue beneath this there were hair follicles and sebaceous glands. In one area, granulation tissue containing a great many large multinucleated giant cells, polymorphonuclear leukocytes and lymphocytes surrounded a portion of the tract.

Comment.—This case demonstrates the possibility of a congenital dermal sinus acting as a passageway for infection to enter the cranial cavity, form an abscess and spread to the subarachnoid space with the production of meningitis. The absence of a demonstrable defect in the occipital bone in the roentgenogram wrongly prevented the diagnosis of a congenital dermal sinus as the source of the meningitis at the age of 1 month. As the sinus penetrated the bone obliquely it was not seen in the roentgenogram. The defect seen roentgenologically on her last admission was a very thin area in the bone over the dermoid cyst and the abscess.

CASE 5.—This female baby of 4 months had a small dimple in the midline about 3 cm. above the external occipital protuberance. A mass was noted beneath this at the age of 2 weeks. This mass gradually increased in size and was firm and tender. Just before her admission the mass opened and drained purulent material.

Examination showed a mass 3 cm. in diameter and 1 cm. in height. It was tender and slightly red, had increased local heat and was fluctuant in the center. There was induration about the mass. Results of neurologic examination were normal.

Roentgenograms showed a rounded defect in the midline in the occipital bone about 2 cm. above the external occipital protuberance.

The clinical impression was that of an infected congenital dermal sinus. Because of the inflammation of the scalp around the mass, the latter was opened and hair, sebaceous material and pus were found. The wound was packed open. Culture showed Staph. aureus. About one month later the remaining small granulating area was isolated, and a dermal tube was observed beneath it extending through the occipital bone inferiorly between the bone and the torcular Herophili. The sinus then broadened into a pear-shaped mass, 3 cm. in its greatest diameter. This mass extended anteriorly between the leaves of the dura beneath the straight sinus. At its most anterior inferior portion it penetrated the tentorium and exposed the cerebellum. This mass also contained hair and sebacious material. It was completely removed and the wound closed. A small amount of thin, seropurulent drainage appeared on the dressing on the fourth postoperative day. This continued to appear for three weeks after the operation.

The specimen showed squamous epithelium which varied considerably in thickness. There were numerous hair follicles beneath the squamous layer and sudoriferous glands in the connective tissue, as well as varying degrees of infiltration by lymphocytes, eosinophils and plasma cells.

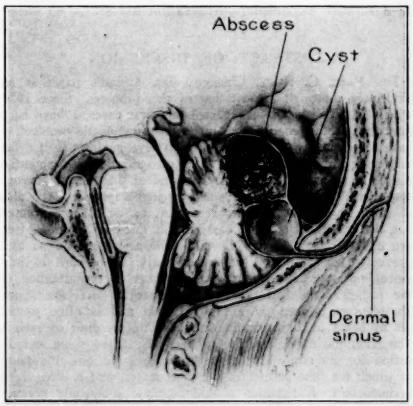

Fig. 4.—A sagittal section showing the sinus leading from the skin into a dermoid cyst in the posterior fossa and the cyst, in turn, connecting with a cerebellar abscess.

Comment.—In this case the dermal sinus was expanded to form a dermoid cyst subcutaneously and intracranially in the posterior fossa. The infection in the superficial dermoid cyst had not yet spread to the cerebellum.

COMMENT

Bacteria may enter the central nervous system by way of a congenital dermal sinus located at any point from the occipital region to the coccygeal region. As a result, meningitis, subdural abscess, intramedullary spinal cord abscess or brain abscess may occur. In addition, subcutaneous, paraspinal or epidural abscesses may be present.

Including the 5 cases just reported, there are now 19 published cases of infection of the central nervous system secondary to a congenital dermal sinus. In the great majority the infection occurred under the age of 5 years, but there was 1 patient who was 18. The results of surgical therapy are very favorable, 84 per cent having recovered with relatively little or no residuals.

With earlier recognition the results will be even better, and, if possible, the sinus should be excised before infection occurs.

In addition to the dermal sinuses resulting in infection in the central nervous system, 3 other cases have been reported. Ottonello [12] published the case of a girl, 20 years old, with a thoracic dermal sinus at the bottom of which was a dermoid that lay beneath the arachnoid and produced spinal cord compression. List [8] and Kooistra [13] reported the case of a boy of 19 with a dermal sinus in the thoracic region and evidence of spinal cord compression. This sinus ended in an intramedullary dermoid cyst in the thoracic cord. Maxwell and Bucy [14] described a child of 9 months with a congenital dermal sinus associated with diastematomyelia at the third lumbar vertebra. The dermal sinus was attached at the intersection of each caudal dura mater.

CONCLUSION

A careful search for a congenital dermal sinus should be made in any patient having pyogenic meningitis, evidence of rapid spinal cord compression or evidence of a rapidly expanding intracranial mass.

ABSTRACT OF DISCUSSION

DR. PAUL C. BUCY, Chicago: Dr. Mount's paper is an extremely thorough presentation of this problem. Since 1934, when Dr. Walker and I reported our first cases, I have been interested in this condition mainly as a prophylactic problem. I have seen few cases in which infection developed. It is of great importance that these sinuses be recognized as a potential source of infection of the meninges and of the central nervous system which may result in a permanent paraplegia. It is also of great importance that we recognize, as Dr. Mount pointed out, that this trouble begins early in life. Most of these children are under 5 years of age when the infection develops so that preventive therapy must be started early. It perhaps is even more important that we bring this matter to the attention of the pediatricians than that we recognize it ourselves. Such an anomaly is seen by the pediatrician and is often passed off as being an unimportant dimple. The presence of such a dimple in the midline of the back overlying the spine is indication for its removal. In removing these lesions, the point at which the tube penetrates the dura mater, and it often does, is important. Extirpation should continue subdurally because often there is an epidermoid or dermoid cyst within the dural sac. If the tube is cut off flush with the dura mater externally and this sac is left behind, even though no infection develops, the patient may subsequently suffer from an intraspinal epidermoid cyst.

DR. A. EARL WALKER, Baltimore: I have seen probably 6 or 8 congenital dermal sinuses in infants who had no evidence of infection of the nervous system. Removal of the sinus at that time is usually a simple matter. Some of the sinuses do not extend down to the dura mater; some are superficial and go only to the soft tissues. Others, as has been emphasized, penetrate the dura mater. It is particularly important that these cases be recognized because when the sinus becomes infected the condition may be diagnosed as tuberculous meningitis and treated as such, in some cases disastrously. If the condition is kept in mind, the diagnosis is easy, the treatment simple and the prognosis excellent.

12. Ottonello, P.: Contributo alla conoscenza della syndrome rare da tumori embriogenetici; dermoide spinale associato a rachischisi; decorso atipico; efficace intervento chirurgico, Riv. di pat. nerv. **41**: 512, 1933.
13. Kooistra, H. P.: Pilonidal Sinuses Occurring Over the Higher Spinal Segments with Report of a Case Involving the Spinal Cord, Surgery **11**: 63, 1942.
14. Maxwell, H. P., and Bucy, P. C.: Diastematomyelia: Report of a Clinical Case, J. Neuropath. & Exper. Neurol. **5**: 165, 1946.

Special Article

PRIMER ON THE RHEUMATIC DISEASES

PREPARED BY A COMMITTEE OF THE AMERICAN RHEUMATISM ASSOCIATION

(Concluded from page 1146)

GOUT AND GOUTY ARTHRITIS

Gout is a metabolic disease of unknown causation characterized by (1) acute attacks of arthritis with freedom of joint symptoms between attacks except in a minority of patients in whom chronic deforming changes develop; (2) increased concentration of uric acid in serum and other body fluids; (3) eventual deposition of sodium urate crystals in articular, periarticular and subcutaneous tissues, sometimes also in the urinary tract, and (4) degenerative changes, particularly in the vessels of the kidneys, heart and brain, in many patients who have had the disease for years.

More than 90 per cent of gouty patients are males, usually more than 30 years of age. The disease is distributed diffusely among races, nationalities and social levels. Although an excessive intake of purine substances or alcohol may provoke an attack of gouty arthritis in those who are afflicted with the underlying metabolic disturbance, purines and alcohol do not cause the disease. Other factors which may precipitate an acute attack of arthritis include surgical operations, dietary indiscretion, emotional stress, crude liver extract, thiamine, dehydrocholic acid and mercurial diuretics.

DESCRIPTION OF AN ACUTE ATTACK OF GOUTY ARTHRITIS

Most patients are not aware of any prodromes of an acute attack; others notice one or more nonspecific symptoms. The first articular symptoms may occur at any hour of the day or night. Within a few hours the affected joint or joints usually become red, warm, swollen and exquisitely tender to touch and acutely painful when moved. Weight bearing is impossible in the more severe attacks which affect the lower extremities. A moderate fever, leukocytosis and an increased sedimentation rate may be present. The metatarsalphalangeal joint of the great toe is affected in about 50 per cent of the patients, but other toes or joints of the feet, ankles, knees, hands, wrists or elbows may be involved. The arthritis may be monoarticular or migratory and polyarticular. Joint effusion or acute bursitis not uncommonly is associated with the synovitis. If the attack is not treated specifically, severe symptoms may last for several days or even weeks; if

proper treatment is instituted, symptoms usually subside rapidly. After the acute attack the joint is essentially unchanged from its condition prior to the attack.

DIAGNOSIS

Family History.—A family history of gout may point the way to a correct diagnosis.

Clinical Findings.—Recurring attacks of acute joint pain as noted, with completely asymptomatic intervals, are seen infrequently in adults except in gout.

Serum Uric Acid.—An increase in the content of urates in serum is a characteristic finding in gout. The level in the serum usually is above 6 mg. and in whole blood above 4 mg. per hundred cubic centimeters. Some laboratories have considerable difficulty with uric acid determinations and in such instances a diagnosis of gout may be made in certain patients irrespective of the uric acid level. Nongouty conditions which may be associated with an increase in serum uric acid include renal insufficiency, leukemia, polycythemia vera, pernicious anemia and certain infections.

Tophi containing sodium urate crystals are found only in gout. They occur most often about the margin of the ears and less often in the olecranon region and around joints of the hands and feet. If a tophus is suspected, its contents should be removed and examined microscopically for needle-like crystals or chemically by means of the murexide test.

Roentgenologic Examination.—During the earlier stages or years of the disease the joints may appear normal by roentgen ray. As attacks recur osseous tophi are observed as punched-out areas in the bones of the fingers and toes especially.

Therapeutic Test.—Colchicine, if given promptly and in sufficient doses, will usually relieve the acute manifestations of gouty arthritis in a remarkable manner. Other forms of arthritis are unaffected by colchicine.

TREATMENT

Acute Attack.—Colchicine is specific for acute attacks. It is preferable to the wine or tincture of colchicum. One 0.5 mg. tablet (grain $\frac{1}{120}$) should be taken every hour until the onset, in severe attacks, of gastrointestinal symptoms (nausea, vomiting or diarrhea) or, in mild attacks, until pain is relieved. If gastrointestinal symptoms develop, tincture of camphorated opium, 5 cc. (1 drachm), should be given as needed. Acetylsalicylic acid, 4 to 6 Gm. (grains 60 to 90) may be prescribed daily during the acute attack. There should be a liberal intake of fluids with a diet as noted in the next section.

Between Attacks.—The diet should be balanced in regard to content of protein, carbohydrate and fat. Substances high in purines such as liver, kidney, brains, sweetbreads and anchovies and sardines should be avoided. Other foods which contain appreciable quantities of purine bodies and should be eaten sparingly include bacon, beef, tongue, codfish, duck, goose, game birds, halibut, lamb, meat soups, perch, pike, rabbit, shellfish, squab, trout, turkey, veal and venison. If the patient is overweight, a reduction in calories is indicated. Supplementary vitamins and minerals are of no value in the absence of a specific deficiency in them. There should be an abundance of fluids taken during the day to aid in the excretion of uric acid. Benefit has been claimed by some physicians for a few colchicine tablets each week as well as acetylsalicylic acid intermittently. There should be no objection to the use of either one. If there is a tendency for urates to precipitate in the urine, sodium bicarbonate, 1.3 to 3 Gm. (grains 20 to 45) three times a day, is of value. Exercise should not be restricted providing it does not put undue strain upon an involved joint. Surgical intervention is sometimes indicated for removal of subcutaneous tophi and for other corrective measures.

NONARTICULAR RHEUMATISM

Many persons who suffer from rheumatism do not have disease of the joints but are afflicted with one or another form of a large variety of illnesses collectively called nonarticular rheumatism. Some of these afflictions are poorly defined clinically and pathologically, so that there is lack of agreement concerning their terminology and significance. There is no disagreement, however, concerning the prevalence of this group of rheumatic ailments and the importance of differentiating them from arthritis. In the United States the average incidence of this group of diseases among patients in arthritis clinics is approximately 30 per cent; in Great Britain it is even greater.

Among the nonarticular rheumatic diseases should not be included the many febrile illnesses, particularly infectious diseases of specific causation, which in prodromal or early stages are frequently accompanied by rheumatic symptoms which may constitute the patient's chief complaint. As these ailments progress, their nature becomes evident so that differentiation from primarily rheumatic diseases is usually not difficult. Also it should be emphasized that varying degrees of nonarticular fibrous tissue abnormalities are usually associated with different forms of arthritis; this secondary fibrositis contributes significantly to the patient's discomfort and disability. It is important, however, to appreciate that there are many forms of nonarticular rheumatism which occur entirely independently—primary nonarticular rheumatic diseases. This group of ailments includes:

Fibrositis, generalized
Fibrositis, localized
Lumbago
Painful stiff neck
Bursitis
Periarthritis (para-arthritis)
Tendonitis ("tendon attachment syndrome")
Tenosynovitis
Fasciitis
Panniculitis
Herniated subcutaneous fat
"Shoulder-hand syndrome"
"Psychogenic rheumatism" (rheumatic manifestations of psychoneurosis)

FIBROSITIS

There is a clinically distinct pattern of rheumatism which affects primarily the nonarticular fibrous tissue, called variously fibrositis, myofibrositis, muscular rheumatism, myositis, etc. None of these terms is entirely suitable; "fibrositis" has become more generally used. Although this name indicates a fibrous tissue disease, it is objected to because there has been no substantiation that this is truly an inflammation as the suffix implies.

Primary fibrositis may be rather generalized or sharply localized. The more disseminated form of the illness involves the fascia, tendons and aponeuroses particularly in the back, shoulders, thighs and hands, although all other fibrous tissue may be prominently affected. Localized forms of fibrositis frequently appear as bursitis, tenosynovitis and regional fasciitis.

Causation.—The cause is unknown. The same uncertainties surround the nature of this rheumatic disease as exist for rheumatoid arthritis. In some instances acute infections, trauma, unusual physical activity, fatigue and exposure to dampness and cold appear to

be contributory causes. In the majority of cases even these factors cannot be incriminated; the illness seems to originate "out of a clear sky." Inherited fibrous tissue characteristics may prove to be of etiologic importance.

Pathologic Features.—These have not been clearly defined. Histologic studies have been reported variously to show exudation in the connective tissue, small infiltrations of round cells, tender fibrous tissue nodules and mild degenerative changes in white fibrous fibers and muscles. No consistent changes are agreed on by students of this disease, many of whom consider that this illness is not one of characteristic cellular inflammation, but that the pathologic changes are chiefly chemical, chemicophysical or an enzymatic disturbance which alters the physiology of the tissues involved.

Clinical Features.—The clinical pattern of fibrositis is rather consistent. Affected persons are usually young or middle-aged adults. The illness may begin acutely with a severely painful stiff neck or lower part of the back requiring bed rest. When so acute, the illness usually subsides within seven to fourteen days. More commonly the onset is insidious. Aching and stiffness of the neck and shoulders, lower part of the back or the entire back are common early symptoms. The posterior structures of the shoulder girdle, the interscapular region, the upper parts of the thighs, especially about the femoral trochanters, are frequent sites of symptoms. Turning, stooping and twisting motions of the spine, abduction and rotation at the shoulders and lying on the side are difficult to do and aggravate the symptoms. Often the hands become stiff; movement of the fingers is difficult and clumsy, and grasp becomes weak so that objects are dropped and work with the hands becomes difficult or impossible.

Symptoms and dysfunction usually are worse after rest; therefore they are maximal on arising. Exercise of the affected parts usually limbers and relieves the aching. Patients feel best after midday until evening when stiffness and pain are usually worse. Stiffness resulting from rest and cool environment is often referred to as "jelling" of the muscles and fibrous tissue. Dampness, cold, rain and snow usually worsen; warmth, dryness and summer season normally relieve.

Symptoms usually fluctuate and even disappear and recur. The illness usually continues for long periods, but seldom is it sufficiently severe to incapacitate the patient; it is more of a "nuisance" disease. Always the systemic health is good. Fever, loss of weight and muscle atrophy do not occur. The joints do not show changes. Stiffness limits motions, and the affected parts may be tender. Almond-sized, tender nodules are sometimes felt in the lumbosacral region.

Laboratory Observations.—Results of laboratory tests are usually normal. There is no anemia or leukocytosis; erythrocyte sedimentation rate is normal or only slightly elevated; roentgenograms do not show changes in cartilages or bones.

Diagnosis.—This is based on the characteristic clinical history, absence of pathologic joint changes, normal systemic health and negative laboratory findings. Differentiation from early rheumatoid arthritis, mild osteoarthritis especially of the spine and psychogenic rheumatism is the chief diagnostic problem. Often the possibility of early rheumatoid arthritis or degenerative joint disease can be excluded only after careful observation of the patient for some time.

Prognosis.—The outlook is relatively good. Crippling and deformities never result. The disease usually subsides or is controlled by treatment, although there are some stubborn cases. Patients should be informed that they have only a "nuisance" illness rather than a crippling disease, for they usually fear that they have arthritis and are greatly relieved to learn that their disease is relatively mild.

Treatment.—Treatment of fibrositis is supportive and symptomatic. Avoidance of strenuous physical activity and procurement of additional daytime rest are wise, but it is a mistake to avoid ordinary activity and moderate recreation is often advantageous. Mild exercise usually greatly aids limbering up and relieves stiffness and aching, whereas prolonged or severe exercise usually increases discomfort. Heat often relieves; massage which gradually is made rather firm is usually helpful, and planned exercise done after application of heat commonly relieve stiffness and aching. Hot packs are usually helpful for acutely painful episodes. Analgesia is usually accomplished by use of acetylsalicylic acid or its derivatives. Procaine injected into "trigger points" of pain may break the reflex and afford relief for varying lengths of time. Antispasmodic drugs (d-tubocurarine, tolserol* [3-ortho-toloxy-1,2-propanediol]) have been reported to have varying success. Roentgen therapy is usually disappointing. "Fibrositic vaccines" are fast losing popularity because they are rather ineffective. Vitamin E has been reported to be beneficial, but trial has been disappointing to most investigators. Avoidance of dampness and cold usually lessens the symptoms; some patients are relieved in a warm, dry climate.

LOCALIZED AND SPECIAL FORMS OF FIBROSITIS

Fibrous tissue irritation or inflammation may be rather localized. Symptoms and disorders of function depend on the anatomic localization. Good examples are the acute, painful stiff neck and "lumbago." Each of these painful conditions depends on irritation of the muscle sheaths, fascia, tendons and ligaments in the back. Muscle spasm is often severe. Hot fomentations and injections of procaine into the center of the irritation are apt to effect prompt relief. Antispasmodic drugs have more value in this form of fibrositis with acute muscle spasm.

Bursitis and Tendonitis.—Inflammation of a bursa is a common form of localized fibrositis. It may be caused by trauma, unusual use of the part or infection, or the cause may be unknown. Any bursae about joints may be inflamed. Commonly affected are the subacromial, olecranon, ischial, prepatellar and achilles bursae. One of the most difficult problems is fibrositis about the shoulder, which is much more frequent than arthritis of the shoulder joints and often begins with subacromial bursitis. This may begin precipitously or insidiously and may be acute or chronic.

Acute Subacromial Bursitis: Acute subacromial bursitis may be mild or severe. It is characterized by pain and tenderness usually localized to the subacromial region, made worse by allowing the arm to hang unsupported, by pressure over the tip of the shoulder or by movement of the shoulder in abduction and rotation. Sometimes these motions are markedly restricted by severe pain. Fluid may accumulate in the bursal sac, causing additional pain from the distention. This fluid may contain calcium salt in semisolid consistency.

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It is often difficult to determine whether subacromial bursitis or irritation of the supraspinatus tendon is responsible for symptoms because of the proximity of these two structures. Irritation of one may secondarily affect the other adjacent structure, so that both become a source of pain. Calcification in the tendon near its attachment is common, and sometimes this may rupture into the bursa. Abnormal bursal or tendinous calcium may be absorbed or it may become firm and add to the irritation of adjacent structures.

Diagnosis is usually not difficult because of the distinct clinical pattern; it is often aided by roentgenographic evidence of soft tissue calcium deposits. The shoulder joints always appear normal in the roentgenograms.

Treatment should be directed to relieving the pain, maintaining function and reassuring the patient as to the relatively mild nature of the disease. Local application of radiant heat or diathermy may relieve, but often aggravates pain, in which case cold usually relieves. Rest during the more acute phase followed by graded exercises to restore motion is helpful. Withdrawal of exudate from a distended bursa promptly relieves. Local roentgen therapy helps in some cases, especially in the subacute stage. Local procaine infiltration or brachial plexus or superior cervical ganglion block will usually give temporary relief, which in addition to providing analgesia will allow exercises to maintain motion at the affected shoulder. If calcification is firm and adhesions restrict motion, excision of the calcific mass and liberation of the shoulder may be required.

With proper care promptly provided, acute bursitis can usually be arrested or controlled. If it becomes chronic, periarticular fibrositis may result and enhance the shoulder disability. (Periarthritis at the shoulder may also begin without apparent initial bursitis.) If stiffness of the shoulder persists, muscles atrophy and motion becomes so limited that a "frozen shoulder" may result. Careful manipulation with the patient under anesthesia may be required to regain motion.

Bursitis in other locations presents similar problems, the anatomic localization accounting for the differences in the clinical picture and therapeutic considerations. Tendons may become inflamed, although more often they are painful without evidence of inflammation, accounting for the symptom complex known as "tendon attachment pain." This may result from trauma or from unusual use, with or without regional bursitis. This is a common difficulty at the attachment of the conjoined tendon onto the humeral epicondyle—known as "tennis elbow." Treatment is similar to that for bursitis.

Tenosynovitis.—Tendon sheaths may become inflamed. Specific infection such as tuberculosis may be the etiologic factor, but more often the cause is unknown. Sometimes nodular or stenosing changes (De Quervan's) result impeding motion of the encased tendon. When this condition affects flexor tendon sheaths of a finger, extension may not be possible after the finger is flexed and "trigger finger" results. If warm baths or paraffin dips and exercise do not relieve, incision of the tendon sheath may be required to free the motion of the finger.

Fasciitis and Panniculitis.—Palmar fasciitis may result in adhesion and contracture limiting the extension of fingers. Contracture of the flexor tendons of the fingers may occur, especially in the fourth and fifth digits, producing "Dupytren's contracture."

The subcutaneous fascia may become inflamed with or without the fat components of subcutaneous tissue. This may be nodular in character and occur over the abdomen, shoulders and thighs, giving rise to the painful syndrome usually called panniculitis.

Pain in the back, referred along the appropriate segmental nerve distribution, may simulate fibrositis and be caused by herniation of subcutaneous fat through a weak portion of the fascia or a small foramen, a condition recently described as "herniated fat." Local injection of procaine hydrochloride may relieve temporarily; excision may be needed for permanent relief.

Shoulder-Hand Syndrome.—This interesting and incompletely understood form of nonarticular rheumatism may follow myocardial infarction or painful intrathoracic lesions, vascular accidents, trauma or other irritative lesions about the neck or upper extremity and sometimes without known cause. It is characterized by pain in the shoulder or hand, commonly in both parts; it may be unilateral or bilateral. Shoulder motion is limited by pain; the affected hand becomes edematous and painful so that it is held stiff. After weeks or months atrophy of the shoulder and hand occurs and adhesions or contractures limit motion in the affected parts. Atrophy of bone with high grade osteoporosis usually appears in roentgenograms, which always show normal joint structure.

This syndrome is thought to be a reflex dystrophy. It needs to be differentiated from rheumatoid arthritis. Treatment with usual measures of physical therapy and analgesics is often without benefit. Usually brachial plexus or superior cervical ganglion block with procaine hydrochloride is the most effective means of allaying pain, which should be accomplished effectively as soon as possible so that functional exercises can be effected to prevent stiffness. If stiffness of shoulder or hand results occupational and physical therapy may rehabilitate.

Psychogenic Rheumatism.—A common form of nonarticular rheumatism in civilian as well as military practice is psychogenic rheumatism—the rheumatic manifestations of psychoneurosis. During World War II it was the commonest form of rheumatism encountered in many hospitals and field areas. Psychoneurotic persons in emotional conflict caused by psychic trauma, fear, anxiety, apprehesion or sorrow may experience arthralgia, muscle and tendon aches, stiffness, interference with joint motion and other rheumatic symptoms, which resemble some forms of arthritis or fibrositis from which they must be differentiated. Recognition is usually not difficult when psychogenic rheumatism exists alone. Absence of joint changes on clinical and roentgenologic examination, normal laboratory observations and good organic health are characteristic. Bizarre deformities not conforming to anatomic changes and recognition of other evidence of psychoneurosis are helpful diagnostic features. More difficult is it to differentiate psychogenic rheumatism from fibrositis. Aids are: lack of consistent localization of symptoms; lack of benefit from analgesics, heat and physical therapy; failure to improve in warm atmosphere and after mild exercise—all usually beneficial to patients with fibrositis. Treatment should be directed to relieving the emotional conflict, rationalization of the problems and correction of the psychoneurosis. Unless these objectives are realized treatment will be disappointing.

MISCELLANEOUS FORMS OF ARTHRITIS

There are many kinds of joint diseases which are difficult to classify, and many which appear to be associated or secondary manifestations of profound constitutional illness. We refer particularly to the long list of diseases in which arthritis, arthropathy or arthralgia is frequently associated (see lower half of table 3) and to such other entities as neurogenic arthropathy, intermittent hydrarthrosis and new growths of joints. The list could be even further extended, but the conditions mentioned are undoubtedly the important ones, excluding of course the more common arthritides discussed in other sections. While not as frequently observed as these latter, yet they are important for their own sake, as well as for the fact that they must be kept continually in mind in differential diagnosis.

These conditions have been regrouped in the following paragraphs for the purpose of this discussion.

Neurogenic Arthropathy.—In this category belong the Charcot joints of tabes dorsalis discussed in the section on arthritis due to known microbial agents. Identical arthropathy occurs in syringomyelia and after some peripheral nerve lesions.

There are also functional derangements of joints, without structural change, considered to be psychogenic in origin. The hysterical joint belongs in this group. Recently considerable emphasis has been placed on what some call psychogenic rheumatism (discussed in the previous section). Some observers believed that these psychogenic conditons, when of long standing, may result in true organic changes.

New Growths.—New growths of joints occur with only moderate frequency and may arise from any of the articular tissues. Joints may also be involved secondarily by neoplastic processes arising from adjacent or remote parts of the body. These metastatic lesions are especially important when they involve the spine and must be kept in mind when back pain is extremely severe. Sarcoidosis may produce bone changes and arthralgia.

Reiter's Disease.—Under this heading have been grouped a moderate number of patients in whom arthritis of one or more joints is associated with urethritis, conjunctivitis and keratinising skin lesions. The disease is said to be limited to males. It causes mild to moderate constitutional reactions. The arthritis lasts for weeks or months, and tends to recur. No consistent bacteriologic or other cause has been identified and the true nature of the disease, if it be a separate entity, awaits further clarification.

Intermittent Hydrarthrosis.—This is considered by some to be a distinct entity but may be a manifestation of early rheumatoid arthritis or of some other joint disease. One should use the term with caution and only after every effort to establish a more definite diagnosis by careful physical and laboratory studies.

Palindromic Rheumatism—Palindromic rheumatism also is considered by some to be a true entity, but by others to be a form of rheumatoid arthritis. Its chief features are multiple afebrile attacks of acute or subacute arthritis with pain, swelling, redness and disability, usually of only one small or large joint, in adults of either sex. The attacks appear suddenly, develop rapidly and generally last only one or two days, then disappear completely but recur at short or long irregularly spaced intervals. There is little or no constitutional reaction or abnormality in the laboratory tests, and no significant functional, pathologic or roentgenographic residues are present even after years of the disease and scores, or even hundreds, of attacks. The causation is unknown and the treatment is symptomatic.

Aseptic Necrosis of Bone.—This may occur secondary to an infarct or other localized loss of arterial blood supply. The common cause of this condition is intraarticular fracture or a dislocation. These conditions result in pronounced irregularity in the contour of the articular surface with secondary degenerative joint disease.

Juvenile osteochondritis, such as Legg-Calve-Perthes' disease, produces a change in contour of the joint surfaces similar to that which results from aspetic necrosis. Degenerative joint disease eventuates if full restoration of the contours of the intra-articular surface does not occur. These conditions differ from traumatic aseptic necrosis in that under favorable conditions restoration of normal articular contours can be expected.

Loose Bodies.—Loose bodies in the joint such as those resulting from osteochondromatosis, osteochondritis dissecans, loose fragments from intra-articular fracture, fractured menisci or other foreign bodies, result in sufficient irritation to produce degenerative joint disease.

There are a number of conditions profoundly involving the general health of the subject, most of them of unknown causation and only secondarily manifesting arthralgia and/or acute or chronic bone and joint changes. These conditions include acromegaly, which produces a severe and by some considered a specialized form of degenerative joint disease; ochronosis, which produces degeneration of cartilage, particularly in the intervertebral spaces; clubbing and pulmonary osteoarthropathy secondary to many visceral disorders; hemophilia, which results in hemorrhages into the joint cavity and subchondral bone, producing bone and cartilage degeneration; purpura of various types; Gaucher's and Raynaud's disease. The climacteric commonly is associated with arthralgia but does not cause true arthritis.

Recently attention has been called to the similarity in the pathologic characteristics of a group of diseases, roughly classified as collagen degeneration diseases, and manifesting, among other symptoms, variable forms and degrees of polymyositis, polyneuritis, arthralgia and acute and chronic arthritis. These conditions include acute disseminated lupus erythematosus, dermatomyositis, periarteritis nodosa and scleroderma. The diversity of the clinical pictures suggests varying etiologies. The symptoms vary widely depending on the extent and maximum location of the diffuse lesions. However, the basic pathologic changes, which are mainly in tissues of mesenchymal origin and around small blood vessels, are similar in all. This does not necessitate the assumption of an identical cause, but may mean that these tissues react similarly to diverse agents. The causation of all these syndromes is still unknown, a basic tissue hypersensitivity having been hypothesized most often. No specific therapy is available.

Experimental work indicates that there are true allergic forms of arthritis such as those observed during serum sickness and possibly sequential to the administration of drugs, particularly sulfonamide compounds and penicillin. Some observers believe that sensitivity to various foods may cause transient or permanent joint changes but proof is lacking. True allergic arthritis, aside from serum sickness, is probably rare; the diagnosis should be made with caution.

ADDENDUM

As this Primer goes to press, Hench, Kendall, Slocumb and Polley have just made a preliminary report on the effects of an adrenal and of a pituitary hormone on rheumatoid arthritis. The adrenal cortical hormone, 17-hydroxy-11-dehydrocorticosterone (compound E), has been administered to 14 patients, and pituitary adrenocorticotropic hormone (ACTH) to 2 patients with severe or moderately severe rheumatoid arthritis. In each case improvement in clinical features and in sedimentation rates began to occur within a few days. When administration of the hormone was discontinued the disease generally relapsed promptly.

The rarity of these compounds presently and in the immediate future, and the limited scope of the preliminary data, especially regarding prolonged administration, make inappropriate now the use of the term "treatment" except in an investigative sense. The authors presented their paper, not as a clinicotherapeutic report, but as a study of certain physiologic effects which these new hormones exert on rheumatoid arthritis.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

PENICILLIN (See New and Nonofficial Remedies 1948, p. 148).

The following dosage forms have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Crystalline Procaine Penicillin G in Oil: 300,000 units per cc. in sesame oil, 10 cc. vials.

Crystalline Procaine Penicillin G in Oil: 300,000 units per cc. in sesame oil with aluminum monostearate 2 per cent, 1 cc. cartridges with B-D disposable syringe.

E. R. SQUIBB & SONS, NEW YORK

Crystalline Procaine Penicillin G in Oil: 300,000 units per cc. in peanut oil with aluminum monostearate 2 per cent, 10 cc. vials.

DIGITOXIN-U.S.P. (See New and Nonofficial Remedies 1948, p. 267).

The following dosage form has been accepted:

ELI LILLY AND COMPANY, INDIANAPOLIS 6

Solution Crystodigin: 0.2 mg. per cc., 1 cc. ampuls and 10 cc. vials.

Tablets Crystodigin: 0.1 mg. and 0.2 mg.

U. S. trademark pending.

AMINOPHYLLINE-U.S.P. (See New and Nonofficial Remedies 1948, p. 325).

The following additional dosage form has been accepted:

BARLOW-MANEY LABORATORIES, INC., CEDAR RAPIDS, IOWA

Solution Aminophylline: 0.5 Gm., 2 cc. and 20 cc. ampuls and 0.24 Gm., 10 cc. ampuls.

DIPHTHERIA AND TETANUS TOXOIDS, ALUM PRECIPITATED-U.S.P. (See New and Nonofficial Remedies 1948, p. 498).

CUTTER LABORATORIES, BERKELEY, CALIF.

Diphtheria and Tetanus Toxoids Aluminum Hydroxide Adsorbed Combined (Alhydrox): 1 cc. and packages of two 1 cc. vials. Each cc. contains the required amount of both diphtheria and tetanus toxoids aluminum hydroxide adsorbed. Preserved with sodium ethylmercurithiosalicylate 1:10,000.

Council on Physical Medicine

REPORT OF THE COUNCIL

The Council on Physical Medicine has authorized publication of the following report: HOWARD A. CARTER, *Secretary.*

MONAGHAN PORTABLE RESPIRATOR ACCEPTABLE

Manufacturer: J. J. Monaghan Company, Inc., 4401 Morrison Road, Denver 3.

The Monaghan Portable Respirator is a respirator of the cuirass type. It is designed to give artificial respiration somewhat after the manner of the tank type respirator but without enclosing all of the trunk and extremities. The essential feature is a plastic dome, cuirass or shell that fits only over the chest and abdomen. An electrically driven pump supplies negative pressure at regular intervals to produce breathing.

A storage battery powerful enough to operate the pump for four hours is automatically thrown into action by a special switch in the event of failure of the regular power supply. In addition, a simple provision for hand operation is made.

The apparatus submitted to the Council included one set of plastic cuirass shells (six different sizes), one power unit, one portable self-charging battery unit, four leather straps (for suspending power unit and batteries), two corrugated rubber hoses, six flexible shell straps and one inflating bulb. The total weight is given as 20 Kg. (45 pounds). The shipping weight is 32 Kg. (71 pounds). The power unit is designed to operate either on 110 volts alternating current or 12 volts alternating or direct current with no changes or adjustments. The weight of the battery unit is 18 Kg. (39 pounds).

The power consumption is stated to be 100 watts (1 ampere at 110 volts or approximately 8 amperes at 12 volts). The frequency can be adjusted from 14 to 30 strokes per minute.

The need for the variety of sizes and shapes of shells arises from the fact that leaks between the shell and the patient's body greatly reduce the effectiveness of any cuirass type of respirator. The volume of the space between the cuirass and the patient's body is remarkably small as compared with the corresponding space in the tank type of respirator. This means that any inequality between the volume of air aspirated by the pump and the volume of air that can be inhaled by the patient must result in much greater fluctuations of pressure in the chamber. An inequality that would pass unnoticed in the tank type is intolerable in the cuirass type, and it is easy to show that the smaller the volume of space between the patient and the walls of the respirator chamber, the more important it is that the volume of air aspirated by the pump should be nearly equal to the tidal air one intends to produce in the patient.

The Monaghan Portable Respirator has been found to conform to the "Requirements for Acceptance of Cuirass Type Respirators" described in THE JOURNAL, Nov. 15, 1947, page 715. It has a limited use in applying emergency artificial respiration. Its usefulness in acute poliomyelitis, according to the evidence that has been reviewed by the Council, is confined to transporting the victim from a remote place to a center where a tank type of respirator is available. The Monaghan Portable Respirator does not take the place of a tank type of respirator and is accepted only as supplemental equipment.

This appliance does not adequately equip a medical organization or clinic for sustained artificial respiration to patients with acute poliomyelitis and respiratory failure. The device is not accepted for emergency artificial respiration by life-saving crews such as those of the police and fire departments. In chronic poliomyelitis, the device is recommended for "weaning" the patient from his dependency on prolonged artificial respiration. The Monaghan Portable Respirator is also useful for temporary artificial respiration when nursing care and physical therapy are given to a patient who is otherwise confined to a tank type of respirator.

The Council on Physical Medicine voted to include the Monaghan Portable Respirator in its list of accepted devices.

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SATURDAY, APRIL 30, 1949

ADRENAL CORTICAL HORMONE FOR ARTHRITIS

Hench, Kendall, Slocumb and Polley[1] have just made a preliminary report on the effects of an adrenal and a pituitary hormone on rheumatoid arthritis. In his Heberden Oration, delivered before the Heberden Society of London, Oct. 15, 1948,[2] Hench stressed that rheumatoid arthritis is not necessarily a relentless, chronic, progressive condition which will never have a satisfactory, rapid method of control. He emphasized that even now rheumatoid arthritis is potentially rapidly reversible in any stage of the disease and therefore will eventually become rapidly reversible or rapidly controllable. The stimulus or stimuli necessary to set in motion the processes have been spontaneous, accidental or therapeutic. Chrysotherapy will induce striking remissions in only about 10 or 15 per cent of cases. From a combined program of gold, physical therapy, removal of foci of infection, rest and nutritious diet, striking results are promptly obtained in not more than 15 per cent of cases. When the potency of these remedies is compared with that inherent in jaundice or in pregnancy, which induces definite articular remissions in about 60 to 90 per cent of the cases, a great unrealized potential for the relief of rheumatoid arthritis becomes obvious. The phenomenon of relief of rheumatoid arthritis by jaundice or pregnancy suggested that the disease is caused by some basic biochemical disturbance rather than by a microbic agent. The authors therefore concluded that the discovery of some biochemical denominator common to various agents or states beneficial in rheumatoid arthritis, but commom to jaundice and pregnancy, would provide an improved treatment or control of the disease.

They conjectured further that the antirheumatic substance X might be an adrenal hormone. Since the fall of 1948 these authors have administered the adrenal cortex (17-hydroxy-11-dehydrocorticosterone), designated as compound E, to 14 patients with moderately severe or severe chronic polyarticular rheumatoid arthritis of four and one-half months' to five years' duration. These patients had not been satisfactorily responsive to previous therapy. In 9 of the 14 patients, within a few days a reduction of stiffness of muscles and joints was noted; also lessening of articular aching and pain on motion and tenderness, and significant improvement of articular and muscular function. The appetite often was rapidly improved, and a gain in weight and apparent loss of toxicity of the disease occurred. To similar patients with severe rheumatoid arthritis was given 100 mg. of adrenocorticotropic hormone intramuscularly for twelve days with much the same beneficent results. The sedimentation rates were reduced when either hormone was employed. When their use was discontinued symptoms and signs of rheumatoid arthritis usually but not always returned or increased promptly.

The authors feel that certain clinical facts and theoretical considerations suggest that these adrenal and pituitary hormones may be useful against other rheumatic diseases or against certain nonrheumatic diseases which generally are relieved by pregnancy or jaundice.

The present communication is offered not so much as a clinical therapeutic report as a study of certain physiologic effects which these new hormones exert on rheumatoid arthritis.

Merck & Co., Inc., who have supplied compound E for this study, expressed their regret in a letter in this issue of The Journal that supplies of compound E cannot be expected for treatment or additional research until sometime in 1950 at the earliest; even then supplies will be exceedingly small.

1. Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: The Effect of a Hormone of the Adrenal Cortex (17-Hydroxy-11-Dehydrocorticosterone: Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis, Proc. Staff Meet., Mayo Clin. **24**: 181 (April 13) 1949.

2. Hench, P. S.: Potential Reversibility of Rheumatoid Arthritis, abstracted, Proc. Staff Meet., Mayo Clin. **24**: 167 (March 30) 1949.

ANTICOAGULANTS IN CORONARY THROMBOSIS WITH MYOCARDIAL INFARCTION

Blumer[1] reported in 1937 that mural thrombi are present over the intracardial surface of the infarcted area in about half of the patients with cardiac infarction due to coronary occlusion. Fragments of such thrombi when detached produce clinically recognizable embolic phenomena in about 14 per cent of patients with cardiac infarction. Solandt and his co-workers[2] tied the descending branch of the left coronary artery in dogs and then infiltrated the myocardium at the tip of the

1. Blumer, G.: The Importance of Embolism as a Complication of Cardiac Infarction, Ann. Int. Med. **11**: 499-504 (Sept.) 1937.

2. Solandt, D. Y.; Nassim, R., and Best, C. H.: Production and Prevention of Cardiac Mural Thrombosis in Dogs, Lancet **2**: 592-595 (Sept. 9) 1939.

ventricle with 2 cm. of 5 per cent sodium ricinoleate. Necropsies performed twenty-four hours later on a series of dogs thus treated invariably revealed macroscopic mural thrombi. A series of animals treated similarly except that they had received heparin showed damaged myocardium, necrotic endocardium but absence of mural thrombi. Neither macroscopic nor microscopic mural thrombi were found in this series. In these experiments necrosis and thrombus formation started almost as soon as the sclerosing chemical was brought into contact with the myocardium. After coronary thrombosis several days must probably elapse before necrosis becomes sufficiently severe to induce mural thrombus formation. Thus, these authors theorize one might prevent the formation of a mural thrombus even if the administration of heparin was started rather long after the initial thrombosis. Dale and Jaques [3] demonstrated in dogs that intravenous injection of dicumarol® increases the prothrombin time. The administration of this substance in sufficient amounts prevented the formation of intravascular or extravascular thrombi. The result demonstrates an intimate connection between the clotting mechanism and the formation of thrombi and also provides an experimental basis for the clinical use of the material to prevent thrombosis.

Peters and his co-workers [4] treated 60 patients having coronary thrombosis and myocardial infarction with the accepted treatment, while 50 patients received the usual treatment plus dicumarol® sufficient to maintain their plasma prothrombin activity at 35 to 50 per cent of normal. The incidence of clinical embolism was 16 per cent in the nondicumarolized group and 2 per cent in the dicumarolized group. The mortality rate in the nondicumarolized group was 20 per cent and in the dicumarolized group was 4 per cent. Nichol and Page [5] administered dicumarol® to 44 unselected patients with acute coronary thrombosis with an immediate mortality of 16 per cent. All 26 patients treated in their first attack survived. Neither mural thrombi nor systemic or pulmonic embolic phenomena were found in 6 on whom later postmortem examination was done. In 1 case only was there clinical evidence of pulmonary embolism, and the patient in this case received an ineffective dose of dicumarol.®

The Committee for the Evaluation of Anticoagulants in the Treatment of Coronary Thrombosis with Myocardial Infarction,[6] appointed in 1946 by the Board of Directors of the American Heart Association, presents a statistical study of 800 cases. The report is concerned with the incidence of deaths and of both thromboembolic and hemorrhagic complications in a control series of patients treated by the conventional methods alone and in series of "treated" patients who received anticoagulants (dicumarol,® heparin or both) in addition to the conventional therapy. In 25 per cent of the control patients one or more thromboembolic complications developed, and only 11 per cent of the treated patients had at least one such complication. Among each hundred cases in the control group thirty-six thromboembolic complications were diagnosed clinically, whereas among each hundred cases in the treated group only fourteen thromboembolic complications were so diagnosed. Evidence of extension of the original thrombosis was found in 9 cases per hundred in the control series as against 2 cases per hundred in treated cases. Infarction of new areas in the myocardium occurred in 6.5 per cent per hundred in the control series as against 2.5 among treated patients. Pulmonary emboli occurred in 9.4 cases per hundred among the control group as against 5.2 cases among the treated cases. Cerebral emboli occurred in 3.4 cases per hundred of the control patients as against 1.4 cases per hundred among the treated patients. Peripheral emboli developed in 3 cases per hundred of the control group as against 1 per hundred of the treated patients and venous thrombosis occurred in 5 cases per hundred of the control group as against less than 2 per hundred treated patients. Thus, those receiving anticoagulant treatment had a distinctly better chance of escaping thromboembolic complications than those who received the conventional form of therapy alone.

The committee contends that a range of 30 to 50 seconds of the minimum prolongation of the prothrombin time as measured by the Link-Shapiro modification of the Quick one stage technic produces a safe and an effective therapeutic level. This range of prothrombin times approximates a decrease in prothrombin activity to between 20 and 10 per cent. The committee concludes that patients treated with anticoagulant therapy in addition to the conventional forms of therapy experience a death rate and incidence of thromboembolic complications during the first six week period following an attack lower than those experienced by patients treated solely by conventional methods. Anticoagulant therapy should be used in all cases of coronary thrombosis with myocardial infarction unless a definite contraindication exists. In the absence of other hemorrhagic states, the hazards for hemorrhage due to anticoagulants are not sufficient to contraindicate their use in the treatment of coronary occlusion provided that facilities exist for adequate laboratory and clinical control.

3. Dale, D. U., and Jaques, L. B.: The Prevention of Experimental Thrombosis by Dicoumarin, Canad. M. A. J. **46**: 546-548 (June) 1942.
4. Peters, H. R.; Guyther, J. R., and Brambel, C. E.: Dicumarol in Acute Coronary Thrombosis, J. A. M. A. **130**: 398-403 (Feb. 16) 1946.
5. Nichol, E. S., and Page, S. W., Jr.: Dicumarol Therapy in Acute Coronary Thrombosis; Results in Fifty Attacks, with Review of Data on Embolic Complications and Immediate Mortality in Myocardial Infarction, J. Florida M. A. **32**: 365-370 (Jan.) 1946.
6. Wright, I. S., Marple, C. D., and Beck, D. F.: Report of the Committee for the Evaluation of Anticoagulants in the Treatment of Coronary Thrombosis with Myocardial Infarction: (A Progress Report on the Statistical Analysis of the First 800 Cases Studied by This Committee), Am. Heart J. **36**: 801-815 (Dec.) 1948.

Current Comment

INTERNATIONAL CONGRESS ON RHEUMATIC DISEASES

Among the great unsolved problems of medicine are such conditions as arthritis, rheumatic fever and allied "rheumatic" diseases, which are a significant factor in disability and loss of time in industry. In 1948 the Arthritis and Rheumatism Foundation was established. An International Congress on Rheumatic Diseases will be held at the Waldorf-Astoria in New York from May 30 to June 3. This congress is the first International Congress on Rheumatic Diseases to be held in the United States. Seven (five morning and two afternoon) scientific plenary sessions will be held, and there will be five one-hour round table conferences. In the afternoons several New York hospitals will have clinics in which prominent foreign guests as well as national authorities will be represented. Some one hundred and fifty foreign physicians are expected. The conference is open to qualified physicians. The complete program together with information on registration, entertainment and other activities can be obtained from Mr. Robert D. Potter, Executive Director, 535 Fifth Avenue, New York 17, New York.

MISLEADING PROPAGANDA OF THE "COMMITTEE FOR THE NATION'S HEALTH"

From the mimeographed publicity releases that are circulated by the so-called Committee for the Nation's Health, this organization would appear to be the spearhead in support of the nationalization of medicine in the United States. A recent release is an attack on the National Physicians Committee which repeats the false charge that the National Physicians Committee was an agency of the American Medical Association. Another release charges that state and county medical societies are using "monopolistic controls" to sabotage voluntary health insurance programs. To these charges, Dr. Elmer L. Henderson, Chairman of the Board of Trustees of the American Medical Association, issued the following reply:

This is an irresponsible statement by an irresponsible organization. The charges are false in fact and false in implication. If there are any saboteurs at work, seeking to destroy voluntary health insurance, they undoubtedly will be found in the membership of The Committee for the Nation's Health, which has repeatedly sought to discredit and decry the voluntary health insurance movement.

The people have a right to question the source of these charges—and the sincerity of the people making the charges. The Committee for the Nation's Health has done nothing to advance the nation's health since it has been in business. It was organized solely as a propaganda agency for the socialization of medicine and now apparently has embarked on a campaign to discredit the voluntary systems.

The state and county medical societies throughout the United States, and the American Medical Association, are proud of the part they have played in the phenomenal growth of the voluntary health insurance systems, which now provide prepaid health protection for more than 52,000,000 people.

The cry of monopoly is as absurd as it is false. There are hundreds of competitive voluntary health insurance systems functioning in the country, some under medical sponsorship, some under hospital auspices, and many operated by outstanding private insurance companies.

The doctors of America are supporting all sound voluntary systems, which offer the people adequate protection, and we are now engaged in a great nationwide campaign to make American health insurance-conscious and to increase voluntary coverage. The charges that the medical profession is sponsoring restrictive legislation to achieve "monopolistic control" of the health insurance field are utterly without foundation.

STATEMENT ON BIOLOGIC WARFARE

Recently the Secretary of Defense pointed out[1] that widespread misunderstanding of the potentialities of biologic warfare has resulted from extravagant, inaccurate and unduly spectacular statements. Statements have been made, for example, "that a single plane with a small bomb filled with a biological agent would be capable of wiping out the entire population of a whole city . . ." or "that one ounce of a particular biologic material would be sufficient to kill 200,000,000 people . . ." or that "biologic warfare makes it possible to kill the population of an entire continent . . ." These and similar claims are fantastic and completely unwarranted. Biologic warfare is an attempt to harness epidemic and nonepidemic diseases for purposes of warfare directed against persons, animals and plant food sources. As many of the facts governing spread of epidemic diseases are incompletely understood, one cannot be certain that an epidemic of significant proportions could be produced at will. In any case, proper sanitation and medical treatment could minimize such effects. An important defense against biologic warfare lies in the early identification of disease implanted and prompt institution of appropriate countermeasures to prevent spread. The United States Public Health Service, the Department of Agriculture, other federal and many state and municipal health agencies are now alert to the possibility of such attack. The maintenance of high standards of public health and sanitation and protective measures for animals and crops is considered the first line of defense against biologic warfare. Prompted by intelligence reports of enemy activities in this field during World War II, intensive investigation of the possibilities and potentialities of biologic warfare were initiated in the United States in close collaboration with British and Canadian allies. Research efforts were aimed principally toward securing adequate protection against the use of such elements in warfare by our enemies. The Army, Navy, civilian scientists, private research institutions, industries and departments of government all worked in close collaboration toward these ends. As a by-product of these investigations much information of great peacetime benefit in medical, agricultural and allied fields has been developed. Research and investigation still continue and informational material will be periodically released regarding these activities within limitations imposed by national security considerations.

1. Forrestal, J.: Statement on Biological Warfare Potentialities, National Military Establishment, Office of the Secretary of Defense, March 12, 1949, no. 45-49.

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ORGANIZATION SECTION

MEDICINE IN JAPAN

A REPORT TO GENERAL DOUGLAS MACARTHUR, SCAP, THROUGH BRIG. GENERAL CRAWFORD F. SAMS, DIRECTOR HEALTH AND WELFARE DIVISION, BY THE MISSION OF THE AMERICAN MEDICAL ASSOCIATION WHICH VISITED JAPAN AUG. 3-30, 1948.

A formal invitation was sent by the Department of the Army to the American Medical Association to send a committee to the Far Eastern Command in Tokyo, Japan, for the purpose of reviewing and making recommendations on social security and insurance programs.

Later the following order was received by members of the mission of the American Medical Association:

1. The following named individuals are hereby directed to proceed by commercial aircraft from the places indicated to Fairfield-Suisun Air Force Base, California, reporting thereat before noon 1 August 1948 for further movement by military aircraft to Tokyo, Japan on temporary duty for approximately sixty (60) days, in connection with Civil Affairs/Military Government activities, for American Medical Association Mission, and upon completion of mission to return to home station.

Dr. Elmer L. Henderson, 606 South 4th Street, Louisville, Ky.

Dr. Roscoe L. Sensenich, 180 North Main Street, South Bend, Ind.

Dr. Ernest E. Irons, 122 S. Michigan Ave., Chicago, Ill.

Dr. John H. Fitzgibbon, 812 S. W. Washington St., Portland, Ore.

Dr. Edward J. McCormick, 405 Madison Ave., Toledo, Ohio.

This mission arrived in Tokyo Aug. 3, 1948, spent the first ten days in orientation studies and conferences which included conferences with General MacArthur, General Sams, heads of the several sections of the Health and Welfare Division of the Supreme Commander Allied Powers (SCAP) and the Civil Affairs Division, Military Government Activities, and with officials of the Japanese Government and officers and members of the Japan Medical Association. Reports and data on the many activities of the Health and Welfare Section of SCAP were made available and every facility was afforded to arrive at a fair but realistic opinion.

It quickly became evident that the problem of Health and Welfare and indeed apparently all of the activities of the military government were concerned not with guiding a nation already proceeding along democratic lines who needed direction in the development of medical concepts such as those of social insurance, as was implied in one report of a previous mission, but rather that the Japanese nation had been completely totalitarian and that, for example, while the several forms of health, disability and unemployment insurance in origin and to some extent in operation were separated into large units, they had been all under dominant direction of the central government. The problem of SCAP was that of establishing *de novo* the principles and organization of a democracy among a people who for centuries have known no real liberty. Their totalitarian government had proceeded beyond the stage admittedly advocated by socialistic propaganda in the United States and had already reached the inevitable dictatorship. The problem of SCAP was thus the building of democracy from the ground up, at first by directive and then, as the Japanese acquired some initiative, proceeding by suggestion and advice. The magnitude and the difficulties of the operation as well as the reason for certain procedures can be best understood by some reference to the economic, medical and political situation in Japan following the surrender in August 1945. A brief review of the measures already taken and of their observed effects up to date will then suggest such recommendations as we can make.

JAPANESE ECONOMY

Japan had been a completely totalitarian nation, and in all economic and other activities looked for direction to the central government at Tokyo. The four main islands are mountainous, with approximately 15 to 17 per cent arable land (not over 20 per cent if marginal lands are included), with a total land area about that of California (approximately 158,000 square miles) and a population of 80,000,000. For many years the population had exceeded that which could be fed on the minimal requirement by the indigenous food supply, in spite of intensive agriculture.

Japan, a warlike nation, invaded other more pacific nations and exported a portion of her excess population to Korea, Manchuria and later to China and islands of the Southwest Pacific.

Japan is poor in natural resources. There is some brown coal but no coking coal. There is no locally raised cotton. The mulberry bush is an exception, but rayon has now interfered with the silk industry. By building up a large merchant marine, the Japanese were able to import raw materials and export manufactures made by controlled labor. By maintaining low standards of living they were able to import about 15 per cent of their food supply, and at the same time to accumulate profits to the amount of $50,000,000,000 to $75,000,000,000. This they invested in Korea ($5,000,000,000), in Manchuria ($11,000,000,000) and in other conquered areas and in armaments. This external wealth together with ships and armaments has been lost. The internal economy has been disorganized by total war, and there persists the 15 per cent deficiency in indigenous food supply. The immediate economic problem is therefore the reestablishment of manufactures and of business enterprise and the feeding of the people until they can build up a trade balance sufficient to purchase necessary food.

The problem of promoting democracy in a previously totalitarian nation is thus made doubly difficult by threatened economic collapse. It is a problem, however, which must be met and solved, if chaos and its political outcome are to be prevented. Economic problems are obviously beyond the province of this medical mission, but it is clear that plans for improvement of medical service, the raising of standards of medical education, the control and cure of epidemic and endemic disease and the health and social welfare of the people as contributed to by prepayment medical care and insurance plans can be considered only in relation to and as a part of the economic rehabilitation of the country. To be permanent and successful any program must be realistic and within the ability of the Japanese economy to pay.

The entire procedure of changing the thinking of a nation from totalitarian to democratic concepts must of necessity be a gradual one and must be conditioned to conform to Japanese ideology. Few Japanese have an understanding of what is meant by democracy, liberty or personal responsibility. All of these concepts had to be planted and nurtured. At first the military government had to proceed by directive, but since July 1946, as the Japanese Diet increased in initiative, SCAP has suggested and advised. In the political field, the governors of the forty-six prefectures, who were previously appointed by the central government, are now elected by popular vote. The electoral system has been extended further into the local communities and *guns* (counties). The Diet has been encouraged to pass new laws in keeping with the new democratic status.

JAPAN MEDICAL ASSOCIATION

One of the first medical requirements was the dissolution of the old Japan Medical Association, membership in which was compulsory. This association was merely a harness to keep all doctors under central government control, chiefly for

the administration of government insurance plans. The new Japan Medical Association, organized in November 1947, provides for local *gun* (county) societies, prefectural (state) associations and a central association with representative and voluntary membership. This has been accepted by the Japanese, who, however, were dubious about the success of voluntary membership. However, there are now 56,000 members out of approximately 68,000 doctors. "Upon arrival of Occupation Forces the Japanese public health and welfare activities were found to be in a very demoralized state and practically inoperable. An unsound administration plus the nation's efforts to gear itself during the war had completely broken down any semblance of health or welfare function." Reserve insurance funds had been diverted to the financing of the war.

The Medical Treatment Corporation was another governmental method of taking over the complete care of the Japanese people. This was organized in 1942 and at the time of the surrender had control of six hundred hospitals. All doctors were on salary. This organization was dissolved by SCAP, and the hospitals returned to private local and prefectural custody and use.

Among the immediate acute problems was the control of epidemic diseases. Vaccination against smallpox had been neglected, and there was an epidemic of 17,000 cases. A large scale vaccination program of the entire population was carried out, and smallpox has been practically eliminated from Japan.

CONTROL OF TYPHUS

An epidemic of 32,435 cases of typhus occurred between Sept. 1, 1945 and Aug. 31, 1946. Approximately 17,000,000 persons were dusted with DDT and 5,300,000 vaccinated. Since the second occupational year there have been no further large outbreaks. Similar control of diphtheria, cholera and typhoid epidemics was secured by suitable quarantine, sanitary measures and vaccinations. Tuberculosis has been made a reportable disease. Case finding by roentgenologic and physical examination has been carried out in many factories and schools. Some 23,000,000 persons have been immunized with BCG, a program already introduced in Japan in 1937 but interrupted by war. Venereal diseases were made reportable shortly after the occupation began.

These items serve to indicate the wide activities of the Section of Public Health and Welfare. Other activities concerned sanitation, water supplies, insect and rodent control, sewage disposal, port quarantine and the establishment of health centers in the prefectures. A national Institute of Health has been organized to include in its functions the assay of drugs and biologic products. The Institute of Public Health has been reorganized for the training of public health workers.

MEDICAL EDUCATION

Medical education, the quality of which had further deteriorated during the war, has been reorganized. There were some fifty-three medical schools; some were connected with universities and had reasonable premedical requirements; the majority were connected with normal schools (*Semmon Gakko*) with fair to poor educational requirements. Eight of these poor schools have been closed and eighteen given five years' probation to bring their standards up to university level. During the war many medical students had been admitted with not even normal school training.

National examinations for medical licensure were held for the first time in Japan in April 1947. Previously graduation from medical schools admitted to practice. Some two hundred and fifty separate quasimedical practices have been made illegal.

JAPANESE HOSPITALS

All Japanese hospitals were "closed" institutions with a paid staff of doctors. Most civilians received medical care by going to hospitals. The outpatient services numbered about three times those of the inpatients. The private practitioner who had no hospital connection found it necessary to provide means by which he could maintain contact with his patients, and so thousands of small hospitals with five to ten mats (beds) had grown up, usually offering inferior medical care. At the end of the war there were four hundred and ninety-seven army and navy hospitals which had to be transferred to some other authority. Some were turned over to the Ministry of Welfare; some were converted to general hospitals, tuberculosis sanatoriums and leprosaria, and some were closed. The remainder were made national hospitals and are now "open" hospitals to which any reputable practitioner may send his patient and where he may continue his treatment.

JAPANESE DENTAL ASSOCIATION

A new Japanese Dental Association has been organized. A Nursing Education Council has been formed and demonstration schools of nursing provided. Two types of nurses are planned—the graduate nurse with adequate educational background and three years' training and the practical nurse with less education and one year's training. Extensive nutrition surveys have been carried out. Under the direction of SCAP the pharmaceutic industry has been reestablished, so that now antibiotics and biologic products of controlled potency are domestically produced in amount sufficient for national needs.

These are some of the many accomplishments of the Division of Public Health and Welfare of SCAP in the introduction of democracy into a previously totalitarian country.

In our talks to medical associations and local societies we emphasized liberty of opinion and action under the new régime; with liberty comes responsibility for quality of service and for intiative; with liberty and responsibility must come dignity and the maintenance of high professional and moral standards. No physician can afford to "lose face" by joining a labor union.

The Japanese are an industrious people. They have been exploited by a dictatorship for many decades. An extremely low standard of living has been enforced by controlled labor, and in the process individual initiative has been crushed. Their industrious habit must be continued and not discouraged by socialistic invitation to depend more and more on the government. As private enterprise is reestablished and individual initiative encouraged, the people should and can receive a larger proportion of the result of their own industry in improved standards of living.

In spite of many years of stifled private initiative, there is a growing participation of private nongovernmental agencies in welfare and relief activities. A national fund-raising committee for financing private welfare agencies was organized in 1947 along lines similar to those of our "Community Chest." This was the first campaign of the kind in Japan and secured 84.2 per cent of the announced goal of 678,000,000 yen. Along with the governmental school lunch program, a voluntary agency, especially in rural areas, provided 600,000 children with lunches without governmental help. These efforts are of popular origin and independent of the Zaibatzu families.

The problem of the American Medical Association mission therefore became that of suggesting ways and means by which the program already initiated by the Public Health and Welfare Section of SCAP, which envisages the democratization of the Japanese people economically, politically and medically, can be further facilitated. The measures taken for the control of epidemic diseases, the improvement of sanitation and the establishment of health centers with instruction of the people would doubtless be regarded by everyone as desirable and highly commendable. The chief questions which arise under discussion concern conditions under which physicians must practice, the control of hospitals and their staffs and the administration of existing and proposed social security and prepayment medical plans.

JAPANESE INSURANCE SYSTEMS

Fundamental studies have been made by the Section on Insurance of SCAP and a beginning has been made in the rehabilitation of insurance systems as outlined in a report July 1948 by SCAP, "Modern Japan in the field or social insurance, as in many other fields, took over western institu-

tions without accepting their basic philosophies. The paternalistic authoritarian character of the Japanese régime had definitely influenced its social insurance program. Although laws provided for unpaid prefectural committees to hear appeals under the social insurance programs, there were no records of any appeals having been made, few people knew that such committees existed and, in many cases, committees had not even convened for the purpose of organizing."

There are five major insurance programs in Japan whose financial integrity, however, has been seriously damaged by the diversion of reserve funds for war purposes and the financial inflation which accompanied and followed the war. The five major programs are as follows.

Health (Sickness) Insurance.—"This was a compulsory system for employees of industrial, mining, commercial and transportation concerns employing five or more and with contributions divided equally between employer and employee. This insurance provided for both occupational and nonoccupational illnesses and accidents, paying cash benefits during brief incapacitation and also providing for medical care, maternity care and funeral expenses. An average of 6,400,000 workers plus 12,900,000 dependents were covered."

Employers' Liability Insurance.—"Legislation defining and placing upon the employer in civil engineering, construction and forestry industries responsibility for occupational accidents and illnesses; providing for employer-supported reserve funds from which the employer was reimbursed for medical care, cash benefits for sickness and continuing invalidity (lump sums), funeral and survivors. Estimated coverage 1,250,000 workers."

National Health Insurance.—"A program extending the health insurance system and sponsoring voluntarily organized town and village health associations, which are supported by members' contributions and a government subsidy, providing medical and maternity care and, in some instances, funeral benefits to the rural population and self-employed individuals. Coverage of family heads and their dependents estimated at 41,000,000 persons."

Seamen's Insurance.—"A composite social insurance program for seamen serving on vessels of 20 tons or more, with contributions divided between ship owners and seamen; providing for both occupational and nonoccupational illnesses and accidents, paying cash benefits for sickness and continuing invalidity, funeral and survivors, in addition to old age and medical care. The program covered 92,000 seamen."

Welfare Pension Insurance.—"This is a compulsory system of practically the same employees as are covered by health insurance, with contributions divided equally between employer and employee; paying old age benefits (beginning in 1956) and cash benefits for continuing invalidity and survivors related to both occupational and nonoccupational disabilities. Coverage averaged 6.4 million workers."

In addition there are several government protection systems: a government pension system financed over 97 per cent by the government and covering approximately 700,000 civilian employees; a workmen's compensation for government employees with a coverage of 1,400,000; government mutual aid societies financed equally by government and employees providing medical and maternity and paying cash benefits for confinement, funeral and occupational disabilities and short term sickness; coverage is 328,000 plus 735,000 dependents; government enterprises (eleven societies) for employees in government monopolies, financed equally by the government and employees, for occupational and nonoccupational illnesses furnish a coverage of 1,500,000 employees plus an estimated 3,400,000 dependents.

There was also a Post Office Insurance and Annuity system administered by the Ministry of Communication. This program gave protection comparable to United States life, endowment or retirement commercial insurance policies and provided for death benefits, old age and limited disability. Ninety-one million policies have been issued with a face value of more than 26,000,000,000 yen.

THE SOCIAL SECURITY MISSION

A report by the Social Security Mission of 1947 (SSM) has been widely circulated and contains conclusions and implications with which the American Medical Association Mission cannot agree. This divergence of views derives from a fundamental difference in objectives of the two groups. The Social Security Mission envisages a complete compulsory system of social security and medical care for Japan under government rule and subsidy. This is not essentially different from the system which was in operation before and during the war and which presents a number of faults as pointed out by the Social Security Mission report. The American Medical Association Mission recognizes the necessity of adjusting any over-all plan to the ideology of the Japanese nation and of utilizing existing mechanisms of insurance administration, but only so far as they are compatible with the development of democratic methods necessary to turn back a totalitarian government into the ways of democracy.

The expressed objectives of the two missions (to give the Japanese people better medical care) are the same. The means to be employed differ. The American Medical Association Mission maintains that the worthy objective will not be attained by using means that inevitably will push the Japanese further along the road of centralization of power back to the totalitarianism which has failed and from which they are struggling to escape.

The Social Security Mission report seems to assume that the problem of Japanese medicine and of the social security system is the remedying of defects in a system which had been progressing in a generally desirable direction. In our opinion the system has failed under a totalitarian government and cannot succeed unless organized on democratic rather than on socialistic principles. The American Medical Association Mission would agree with a number of the points made by the Social Security Mission report as to fact and as to some of their conclusions, but this agreement would be for entirely different reasons. The factual findings are the inevitable results of an undesirable system. For example, a conclusion by the report in regard to the necessity for delay in putting into practice plans for the extension and unification of insurance systems is based in the Social Security Mission report to a considerable degree on financial and medical service difficulties. The American Medical Association Mission agrees with the desirability of delay because the systems as now set up are badly devised and productive of inferior and bad medical care. The divergence of views of the two missions can be best shown by reference to some of the recommendations of the Social Security Mission report. This report presents views not compatible with true democracy and also contains inconsistencies within itself. Some of these divergent views and inconsistencies may be best pointed out by referring to the Social Security Mission report.

The Social Security Mission has approached its study with a view to reorganizing the extensive Japanese social security system "in a democratic manner" so that the system may be more adequate, better suited to sound administration and more "responsible to the common will." To accomplish this the Social Security Mission report envisages a social security system covering the entire Japanese population with a maximum of uniformity or standardization and administered by a central authority. It expresses the idea that social security legislation "has the effect of creating conditions favorable to the exercise of initiative and enterprise and is, therefore, an important ingredient of democracy." The Social Security Mission advises further "the delegation by the Diet to a single ministry, of which the choice of the Ministry of Welfare would seem most appropriate, of full authority and responsibility for the administration of the social security program in Japan."

Such delegation and centralization of authority in the absence of local and prefectural initiative will result in a continuation of present unsatisfactory operation of social security laws. Experience with socialistic programs by which personal responsibility is minimized has always led to loss of initiative and enterprise.

As a matter of demonstrated fact the social security and health legislation covering in one way or another 41,000,000 Japanese has in the past been so manipulated by central authority as to stifle initiative and free enterprise and has therefore been an important ingredient of totalitarianism.

The Social Security Mission report continues:

"Efforts should be directed toward developing the administration of society-managed plans along the lines found useful by the more successful programs in other countries. It is believed that increased employee participation should be encouraged. Most important is the improvement of government-managed health insurance."

In the next paragraph, however, the following appears:

"It will not be simple to achieve a genuine decentralized administration sensitive to the local needs and problems of the insured group and of the persons and institutions furnishing service. Nevertheless, it is believed that the effort will be worth while and must be made if a satisfactory program is to be achieved. Specifically, it is suggested that the government-managed portion be broken up into prefectural or even subprefectural units, with its funds and contribution rates as distinct, within the statutory limits, as are the separate health insurance societies at present."

Thus in one part of the report decentralization is urged and, in another, firm government supervision as has been practiced in the past is advocated.

The Social Security Mission report noted that despite the defects in the hospital system, "it is apparent from the opinions of nearly every group consulted that insured patients generally find care more satisfactory from hospitals than from private practioners."

As a matter of fact 80 per cent of the practice of medicine in Japan was done through dispensaries attached to hospitals, so that the proportion of outpatients to inpatients was approximately 3 to 1. The Social Security Mission report fails to state, however, in this connection, that the doctors were all on salary from the hospitals and that no beds were available to other practitioners unless they established small five and ten bed hospitals themselves. These small hospitals obviously could render only indifferent service. The patronage of the hospitals by the public was therefore a result of the system of staff physicians paid by the hospitals and there were in general few other places where patients could receive similar examination and treatment. The statement in the Social Security Mission report that "as much local autonomy as possible should be permitted to encourage the development of institutions suited to local needs" would seem to be inconsistent with a proposal to center all hospital activities in a central head of a bureau of welfare. SCAP has taken an important step toward the opening of hospitals to all practitioners by providing that those hospitals now called national hospitals (that is, those taken over from the army and navy and not otherwise disposed of) shall receive the patients of any reputable practitioner, who may then follow and direct the treatment of his patient in the hospital. This is the democratic approach to providing the Japanese people with better medical care.

The Social Security Mission report notes that "perhaps the greatest cause of the present unsatisfactory conditions of the health insurance is the failure of doctors to be content with the scale of payments for service and they are succumbing to the temptation to charge fees higher than those officially allowed under the health insurances . . . However the health insurance systems will only function if the agreed-upon rates of payment for services are strictly observed. We believe that the greatest possibility for achieving that essential condition is to have the arrangements made locally between representatives of local interests, who realize fully what the insured people can pay, who recognize the value to the insured group of prepaid medical care, who have a sense of responsibility to the insured group, and who can on a day-to-day basis enforce an observance of the agreement."

With this latter sentiment the American Medical Association Mission is in agreement, but it must be noted that part of the complaint of physicians is that while they might have been satisfied with the fee schedule at the time they earned the money, during the period of inflation their remuneration was delayed sometimes from three to six months and when they received their pay it was in yen, which were worth only a fraction of the original amount earned.

The Social Security Mission report discussed at length the objections to fee for service and raises objections on the grounds that it is claimed that fee for service payment entails a greater expense than would be necessary on a basis of salary. "The present method of paying doctors on a fee for service basis has serious drawbacks. Effort should be directed to experiment with other methods of payment."

The method of capitation payment is discussed in the report. "Each practitioner who wishes to participate in insurance practice agrees to abide by the regulations and his name is placed on the list for the information of the public. Each insured patient selects a practitioner and his name is placed on the list of the doctor of his choice. Every insurance doctor thus becomes responsible for the care of a specified number of insured persons, and he is paid a fixed amount per year (the 'capitation fee') per person on his list."

The alleged advantages of this method are discussed in the report and then certain difficulties such as the payment of specialists and a satisfactory method for payment of drugs and medicine. "The simplest method of payment is of course the use of a salary." In this connection the difficulties of determining the salary scale with allowances for differences in experience, ability and skill are discussed. The report does not refer to the inevitable deterioration of quality of service when it is rendered under salary by government employees. (The inferior and superficial medical service given to patients on the panel system are well illustrated by experiences in England.)

Ineffectiveness of the Former Japan Medical Association.—After discussing an alleged "strong sentiment in Japan for instituting a universal medical care forthwith," the Social Security Mission report states that this is considered unwise at this time. One of the objections urged is that the only way all doctors could now be brought under the plan would have to be by edict and by continued use of the fee for service method of payment. Complaint is also made that the Japan Medical Association was not able to stimulate the required sense of duty among its members. The old Japan Medical Association with its compulsory membership and complete subservience to the central government was unable to enforce service of its own members in the insurance programs even during the war. One official of a prefecture reported to us that in his district, while there were 400 doctors, all of whom were supposed to serve in the insurance program, only 40 so participated. Even in a totalitarian state professional regimentation failed. Certainly a solution of medical service by salary would mean a further deterioration of medical service to the people. The use of the salary method might reduce paper work, but would also reduce quality of service as it has everywhere else where it has seen tried.

RECOMMENDATIONS

The mission was greatly impressed with the progress which General MacArthur and his staff have made in changing over a totalitarian to a democratic state. Local and prefectural elections of officials have replaced previous appointment by central government in Tokyo, and in numerous other respects democratic methods have been installed. Democratic processes have been promulgated.

With respect to medical phases of reorganization, amazing progress has been made since the surrender by the Section of Public Health and Welfare under the guidance of General C. F. Sams. Epidemics have been controlled and the Japan Medical Association has been reorganized and is functioning. Medical education is being reorganized and inferior schools eliminated. A state system of licensure for physicians has been provided. Health centers have been organized and are functioning. Nutritional studies for the guidance of food distribution are in progress. It is planned to continue all of these activities and similar allied ones. The reorganization of the Japan Medical Association is a major step in initiating

and improving quality of service of Japanese physicians. It is hoped that this association may be assisted to develop into a real medical leader.

The proper construction and function of hospital facilities is being encouraged by SCAP. However, it is very possible that the voluntary organization similar to our American Hospital Association could become an important factor in expanding and improving the hospital program. The splendid hospital system which we have in the United States is the result of individual initiative on the part of physicians, lay persons, and voluntary groups. It would, then, we believe, be in keeping with the democratization of the Japanese to make the hospital program a part of community responsibility and a matter of civic pride.

The development of voluntary agencies to assist in promoting and raising the standards of dentistry and nursing and possibly of the medical associates (technicians) might well fit into the program of SCAP.

Medical Libraries.—The medical libraries of Japan present one of the most urgent problems in medical education. Japanese physicians and teachers are anxious for help and information, of which they have received little in the last ten years. We gained the impression that some of such research efforts as are being made had not taken into consideration in their planning scientific facts already well known in other parts of the world. Research and medical education and thereby the health of the Japanese people will be greatly assisted by increasing the library facilities, notably books and magazines, in Japanese medical schools and medical associations.

Health Insurance.—The system of health insurance in Japan is so involved that it would require recommendations in far more detail than are contemplated in this report. However, we believe it possible to make several fundamental suggestions to SCAP.

We believe that wherever possible membership in the health insurance programs ("compulsory health insurance," "health insurance," and "national health insurance") should be voluntary and should arise from a general recognition on the part of the Japanese people that such protection is both desirable and economical.

We believe that the costs of any health insurance program should be primarily the responsibility of the worker and the employer, with the government entering the picture only where the financial needs are such as to require tax support.

We believe that the reconstituted Japan Medical Association might well be called on to assist in any reorganization of the health insurance programs that may be attempted.

In our view the health insurance program should not be placed under a single Ministry of Welfare as suggested by the Social Security Mission. Further, the administration and financing of these programs should be kept entirely separate from those activities concerned with public health and sanitation.

Finally, we believe that the administration of any health insurance program should be on a state (prefectural) or county (local *gun*) level, even if it should seem advisable to handle the financing on a national level. In other words, the problems of administration in the prepayment of medical care are essentially local in character and are not adaptable to national uniformity.

Remuneration of Physicians.—With respect to the method of remuneration of physicians, the fee for service method gives most promise of reasonable quality of care for the people. The improvement of performance under a fee for service program will depend on improvements in medical practice and the stimulation of professional pride in giving good service on the part of the physicians. In turn the ability to give good service will depend on the improvement of quality of medical education.

It is recognized that the production of economic wealth is not uniformly distributed over Japan and that there are many prefectures whose activities will be hampered by reason of the inability of their local economy to produce reasonable taxable revenue. In such prefectures, temporary grants-in-aid from the national government would seem to be for the present the only alternative.

Time will be required to permit the evolution of insurance and welfare plans along democratic lines. The several plans already in existence in Japan have grown up within the ideology of the Japanese people in an atmosphere of a totalitarian government which has failed. The socially desirable aspects of these plans must be conserved, but the process of reorganization will be slower and will require more careful handling than if these plans were being developed *de novo* in a democracy. Obviously, progressive changes should be planned under the general principle of democracy rather than that of socialism and totalitarianism.

E. L. HENDERSON, M.D.
R. L. SENSENICH, M.D.
ERNEST E. IRONS, M.D.
JOHN H. FITZGIBBON, M.D.
EDWARD J. MCCORMICK, M.D.

Washington Letter

(From a Special Correspondent)

April 25, 1949.

"A Voluntary Approach to a National Health Program"

With both branches of Congress again in session, following the ten day Easter recess taken by the House, legislative machinery is beginning to move on a formidable accumulation of health and medical legislation. Both in volume and variety, the problem is such that even the question of how and when to schedule public hearings is giving Congressional leaders considerable concern.

Heightening the general controversy was the publication, a few days before the remodeled national health insurance bill was scheduled to be introduced, of "A Voluntary Approach to a National Health Program" by three Catholic groups. The 20 page report was presented jointly by the Catholic Hospital Association, the Bureau of Health and Hospitals of the National Catholic Welfare Conference and the National Conference of Catholic Charities. Its foreword was written by Bishop Karl J. Alter of Toledo, Episcopal Chairman of the Bureau of Health and Hospitals and chairman of the administrative board of the Catholic Hospital Association.

The joint report opposes compulsory government health insurance, advises voluntary action supported by government aid and recommends establishment of a health division in the Federal Security Agency to administer a program which provides for: increasing the federal share in expansion of hospital construction, under the Hill-Burton Act, from the present $75,000,000 annually to $200,000,000; in addition, an annual subsidy of $25,000,000 is proposed for maintenance of hospitals in scattered and rural areas; federal grants to medical and dental schools to strengthen teaching staffs, facilitate physical expansion and support research; also establishment of loan scholarships to students; bonuses to physicians and dentists as an incentive to practice in doctor-deficient regions; federal financial assistance to nursing schools and to their students; nurses would receive stipends on condition that they agreed to serve up to three years in rural areas and "less favored states"; a similar proviso is made for medical and dental students who accept scholarship loans. Similar assistance is proposed for the purpose of raising the output of medical social workers, dietitians and other professional personnel in the medical sciences.

"The total budget for the above purposes," says the report, "would be approximately $450,000,000. A further detailed study of the specific needs in each category may modify some of the figures mentioned, but the total would be less than $500,000,000. This sum constitutes a little more than 1 per cent of the total present federal budget and would necessitate merely a proportionate increase in the existing tax rates."

Further, the three Catholic groups suggest that persons in lower income brackets—up to $5,000 a year—be permitted to deduct up to $75 from their net income tax for premiums paid to voluntary prepayment plans for medical or hospital care. They estimate that this would cost the government $1,500,000,000 annually, bringing the total cost to the two billion mark. "By contrast, the proposed compulsory insurance law would impose a new burden of approximately six billion dollars tax on wage earners," said the report.

Among Congressional supporters of national health insurance, Senators Murray, Wagner, McGrath and Chavez, and Representative Dingell are members of the Catholic church.

Prescription Bill Would Curb Authority of Food and Drug Administration

A bill that would, in effect, end the regulatory authority which the Food and Drug Administration exercises over drug prescriptions has been introduced by Representative Carl T. Durham (Democrat, North Carolina). Its purpose is to legalize the refilling of prescriptions, even for barbiturates and other potentially dangerous drugs, without requiring the consumer to obtain a new order each time from his physician. Food and Drug Administration officials said that the Durham bill, if enacted, would allow persons to refill prescriptions indefinitely without hindrance, with possible ill effects to themselves, unless state or local laws precluded such practice. The Federal Department Act has assembled data on numerous cases in which persons have become addicted to barbiturates through protracted use of a single prescription, and the agency is planning to use this material in opposing enactment of the measure. The National Association of Retail Druggists was instrumental in the bill's being introduced.

Surgeon General Denies Press Reports on Donora

On April 20 Dr. Leonard A. Scheele, Surgeon General of the U. S. Public Health Service, denied press reports that nearly 100 persons had been ill as the result of smog tests being conducted at Donora, Pa. The four day tests, which ended April 21, were an attempt to determine responsibility for the Donora disaster last fall which took 20 lives. Up to April 20, said Dr. Scheele, not 1 case of illness attributable to the tests was reported to physicians of Donora or nearby Webster.

Medical Legislation

STATE LEGISLATION

Arizona

Bill Enacted.—S. 100 has become Chapter 121 of the Laws of 1949. It amends the law relating to **osteopathic practitioners by** permitting licentiates to perform the same duties and obligations and to exercise all the same rights and privileges possessed by physicians and surgeons of other complete schools of medicine in the practice of their profession except that no osteopathic physician or surgeon shall perform major surgery unless he has had two years of surgical training in a hospital approved for such training by the board or shall demonstrate to the board equivalent training, and the board shall certify in writing to the licentiate his right to perform major surgery before engaging in any such duties.

California

Bill Introduced.—H. Res. 157 proposes the creation of a committee to ascertain, study and analyze all facts relating to **state, county and other public hospitals** and similar institutions and to report recommendations for appropriate legislation relating to such institutions.

Florida

Bills Introduced.—H. 24 proposes to require **chiropracters to** renew their licenses annually. H. 26 proposes amendments to **the chiropractic act** relating to the qualifications of applicants and the procedure for the suspension or revocation of certificates.

Bills Enacted.—S. Mem. 32 was adopted. It memorializes the Congress of the United States to enact into law certain amendments to the **Hospital Construction Act.** S. Mem. 37 was adopted April 8, 1949. It memorializes the Congress of the United States to vigorously oppose all legislation for the enactment of any form of **socialized medicine and compulsory health insurance.**

Illinois

Bill Introduced.—H. 650 proposes that **an** institution requiring, for the effective carrying on of its scientific or educational activities, the use of **live dogs and cats** may apply to the State Department of Public Health for a license to obtain such animals from public dog pounds. Such licenses shall expire annually but may be renewed on application to the Department of Health and the animals so obtained may be used only in the conduct of the institution's scientific or educational activities.

Kansas

Bill Enacted.—H. 145 was approved April 2, 1949. It provides, among other things, that **an autopsy may** be performed on the body of a deceased person by a physician or surgeon when so authorized in writing by the decedent during his lifetime or by the decedent's surviving husband or wife, an adult child, a parent or a brother or sister.

Michigan

Bill Introduced.—S. 247 proposes the enactment of **a hospital licensing law.**

Minnesota

Bills Enacted.—S. 706 has become Chapter 360 of the Laws of 1949. It amends the **Narcotic Drug Act** by defining the words "narcotic drugs" so as to include amidone, isoamidone and keto-hemidone. S. 1085 was approved April 9, 1949. Among other things, it requires every person licensed to practice the healing arts in any form to forward to the State Board of Health, on request, a detailed record of **each case of malignant disease** treated or seen by him professionally. It also authorizes the State Board of Health to establish a cancer statistical research service for collecting, transcribing, compiling and preserving information received by the board showing the incidence of tumors of various types, the procedures in the care of these tumors and the effectiveness of the different methods of treatment of tumors.

Missouri

Bill Introduced.—H. 253 proposes that when a physician, surgeon or pathologist shall be called on by the coroner or any magistrate of the county acting as the coroner to conduct **a postmortem examination,** the county court of said county shall be authorized to allow such physician, surgeon or pathologist to be paid out of the county treasury such fees or compensation as shall be deemed by said court to be just and reasonable.

Nevada

Bill Enacted.—A. 358 has become Chapter 322 of the Laws of 1949. It amends the law relating to the **practice of chiropractic by,** among other things, including the following definitions: Chiropractic is defined to be the science of palpating and adjusting the articulations of the human spinal column by hand only. Chiropractic-physiotherapy is defined to be the adjustment of the articulations of the human body by hand and with the use of electrical, mechanical, hygiene, and sanitary measures, which measures do not pierce or sever the body tissues.

New Hampshire

Bill Introduced.—S. 86 proposes to authorize the formation of **district departments of health.**

New Jersey

Bill Enacted.—S. J. R. 6 has become Joint Resolution No. 4, 1949. It provides for the establishment of a temporary committee to be charged with the duty of investigating, studying and evaluating present facilities and resources and future needs for the prevention, care, treatment and **rehabilitation of the chronic sick.**

New York

Bill Enacted.—A. 666 has become Chapter 460 of the Laws of 1949. It amends the mental hygiene law by designating the state department of mental hygiene as the agency of the state to **administer the mental health act and** to cooperate with the duly constituted federal authorities charged with the administration thereof.

Oregon

Bill Introduced.—H. 530 proposes the establishment of a **temperance and rehabilitation division of** the Oregon liquor control commission which shall be authorized to continue, maintain and operate a rehabilitation clinic and agency for the treatment of persons addicted to the excessive use of alcoholic beverages.

Pennsylvania

Bills Introduced.—S. 848 proposes the creation of a state **board of psychologic examiners** and defines the practice of psychology as the rendering to individual clients or the general public for fees or personal profit of any professional service requiring the application of recognized principles, methods and procedures of the science and profession of psychology such as counseling, interviewing, administration and interpretation of standardized tests of mental abilities, aptitudes and personality characteristics for the purpose of psychologic classification or evaluation or the application of such psychologic technics for purposes of re-education, guidance or readjustment. S. 870 proposes that in any **proceeding to establish paternity** the court on motion of the defendant shall order the mother, her child and the defendant to submit to one or

more blood grouping tests by a duly qualified physician to determine whether or not the defendant can be excluded as being the father of the child and the results of such tests may be received in evidence but only in cases where definite exclusion of the defendant is established.

Tennessee

Bills Introduced.—H. 1541 proposes that **food handlers** must present to their employer a health certificate signed by a physician licensed to practice in the state showing that the person has undergone an examination including a Wassermann test for venereal disease and an x-ray photograph for tuberculosis and showing the results of the examination. H. 1542 proposes that every physician shall give or cause to be given to **each pregnant woman** coming under his care a Wassermann test for venereal disease at the earliest time practicable after the physician has notice of the woman's pregnant condition.

Texas

Bill Enacted.—H. Res. 127 was adopted March 29, 1949. It provides for the appointment of a committee to make investigations concerning the practices of the state **board of examiners in optometry.**

Coming Medical Meetings

American Medical Association, Atlantic City, June 6-10. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Neurology, French Lick, Indiana, French Lick Springs Hotel, June 1-3. Dr. Joe R. Brown, 19 Millard Hall, University of Minnesota, Minneapolis 14, Secretary.

American Academy of Tuberculosis Physicians, Atlantic City, Hotel Dennis, June 4. Dr. Oscar S. Levin, P. O. Box 7011, Denver 6, Colo., Secretary.

American Association of Genito-Urinary Surgeons, White Sulphur Springs, W. Va., Greenbrier Hotel, May 9-11. Dr. Norris J. Heckel, 122 S Michigan Ave., Chicago 3, Secretary.

American Association of the History of Medicine, Lexington, Ky., May 23-24. Dr. Benjamin Spector, 416 Huntington Ave., Boston 15, Secretary.

American College of Radiology, Atlantic City, Chalfonte-Haddon Hall, June 5. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Secretary.

American Dermatological Association, Hot Springs, Va., May 23-26. Dr. Louis A. Brunsting, 102 Second Ave. S.W., Rochester, Minn. Secretary.

American Gastro-Enterological Association, Atlantic City, Claridge Hotel, June 3-4. Dr. Dwight L. Wilbur, 655 Sutter Street, San Francisco 2, Secretary.

American Goiter Association, Madison, Wis., Hotel Loraine, May 26-28. Dr. Thomas C. Davison, 478 Peachtree St., N.E., Atlanta 3, Ga., Secretary.

American Laryngological Association, New York, May 16-17. Dr Louis H. Clerf, 1530 Locust St., Philadelphia, Secretary

American Neurological Association, Atlantic City, June 13-15. Dr. H Houston Merritt, 710 W. 168th St., New York 32, Secretary.

American Ophthalmological Society, Hot Springs, Va., The Homestead, June 2-4. Dr. Maynard C. Wheeler, 30 W. 59th St., New York, Secretary.

American Orthopedic Association, Colorado Springs, May 18-21. Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secretary.

American Otological Society, New York, May 18-19. Dr .Gordon D. Hoople, 713 E. Genesee St., Syracuse, N. Y., Secretary.

American Pediatric Society, Atlantic City, May 5-6. Dr. Henry G Poncher, 1819 W. Polk St., Chicago 12, Secretary.

American Proctologic Society, Columbus, Ohio, May 31-June 4. Dr. W. Wendell Green, 1838 Parkwood Ave., Toledo 2, Ohio, Secretary.

American Psychiatric Association, Montreal, Canada, May 23-27. Dr Leo H. Bartemeier, General Motors Bldg., Detroit 2, Secretary.

American Radium Society, Atlantic City, June 5. Dr. Hugh F. Hare, 605 Commonwealth Ave., Boston 15, Secretary.

American Society for Clinical Investigation, Atlantic City, May 2. Dr. Paul B. Beeson, Grady Hospital, Atlanta 3, Georgia, Secretary.

American Therapeutic Society, Atlantic City, June 2-5. Dr. Oscar B. Hunter, 915 Nineteenth St. N.W., Washington, D. C., Secretary.

American Urological Association, Los Angeles, Hotel Biltmore, May 16-19. Dr. Thomas D. Moore, 899 Madison Ave., Memphis 3, Tenn., Secretary.

Arizona State Medical Association, Tucson, May 8-10. Dr. Frank J. Milloy, 15 E. Monroe St., Phoenix, Secretary.

Association for the Study of Internal Secretions, Atlantic City, June 3-4 Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City 3, Secretary

Association of American Physicians, Atlantic City, May 3-4. Dr. Henry M. Thomas Jr., 1201 N. Calvert St., Baltimore 2, Secretary.

California Medical Association, Los Angeles, May 8-11. Dr. L. Henry Garland, 450 Sutter St., San Francisco 8, Secretary.

Connecticut State Medical Society, New Britain, State Teachers' College, May 3-5. Dr. Creighton Barker, 258 Church St., New Haven, Secretary

Georgia, Medical Association of, Savannah, Hotel De Soto, May 10-13 Dr. Edgar D. Shanks, 478 Peachtree St., N.E., Atlanta, Secretary.

Hawaii Territorial Medical Association, Honolulu, May 5-8. Dr. Harry L. Arnold Jr., 510 S. Beretania St., Honolulu, Secretary.

Idaho State Medical Association, Sun Valley, June 20-23. Dr. Alfred M. Popma, 220 N. First St., Boise, Secretary.

Illinois State Medical Society, Chicago, Palmer House, May 16-18 Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.

International Congress on Rheumatic Diseases, New York, Hotel Waldorf-Astoria, May 30-June 3. Dr. Philip S. Hench, Mayo Clinic, Rochester, Minn., Chairman, American Committee.

Kansas Medical Society, Topeka, May 9-12. Dr. D. D. Vermillion, 512 New England Bldg., Topeka, Secretary.

Louisiana State Medical Society, New Orleans, May 5-7. Dr. P. T Talbot, 1430 Tulane Avenue, New Orleans 13, Secretary.

Maine Medical Association, Poland Spring, Poland Spring House, June 19-21. Dr. Frederick R. Carter, 142 Hight St., Portland 3, Secretary.

Massachusetts Medical Society, Worcester, May 24-27. Dr. H. Quimby Gallupe, 8 Fenway, Boston 15, Secretary.

Minnesota State Medical Association, St. Paul, Municipal Auditorium, May 9-11. Dr. B. B. Souster, 496 Lowry Medical Arts Bldg., St. Paul 2, Secretary.

Mississippi State Medical Association, Biloxi, May 10-12. Dr. T. M Dye, Box 295, Clarksdale, Secretary.

National Tuberculosis Association, Detroit, May 2-6. Dr. H. Stuart Willis, 1790 Broadway, New York 19, Secretary.

Nebraska State Medical Association, Omaha, Hotel Paxton, May 2-5. Dr. R. B. Adams, 1315 Sharp Building, Lincoln 8, Nebraska, Secretary.

New Hampshire Medical Society, Newcastle, Hotel Wentworth, June 14-15. Dr. Carleton R. Metcalf, 5 S. State St., Concord, Secretary.

New Mexico Medical Society, Roswell, May 5-7. Dr. H. L. January, 221 W. Central Ave., Albuquerque, Secretary.

New York, Medical Society of the State of, Buffalo, Hotel Statler, May 2-6. Dr. Walter P. Anderton, 292 Madison Ave., New York 17, Secretary.

North Carolina, Medical Society of the State of, Pinehurst, The Carolina, May 9-11. Dr. Roscoe D. McMillan, P. O. Box 232, Red Springs, Secretary.

North Dakota State Medical Association, Minot, May 14-17. Dr. O. A Sedlak, 702 First Ave. S., Fargo, Secretary.

Oklahoma State Medical Association, Tulsa, Mayo Hotel, May 15-19 Mr. R. H. Graham, 210 Plaza Court Bldg., Oklahoma City, Secretary.

Rhode Island Medical Society, Providence, May 11-12. Dr Morgan Cutts, 106 Francis St., Providence 3, Secretary.

Society for Investigative Dermatology, Atlantic City, Ritz Carlton Hotel, June 11-12. Dr. S. William Becker, 55 E. Washington St., Chicago 2, Secretary.

Society of American Bacteriologists, Cincinnati, May 15-20. Dr. John Blair, Hospital For Joint Diseases, New York, Secretary.

Society of Biological Psychiatry, Atlantic City, Chalfonte-Haddon Hall, June 12. Dr George N. Thompson, 1136 W. Sixth St., Los Angeles, Secretary.

South Carolina Medical Association, Myrtle Beach, May 17-19. Dr. Julian P. Price, 15 W. Cheves St., Florence, Secretary.

South Dakota State Medical Association, Yankton, May 22-24. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.

Southeastern Surgical Congress, Biloxi, Miss., May 23-26. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta 3, Ga., Secretary.

Texas, State Medical Association of, San Antonio, May 2-5. Dr. Harold Williams, 700 Guadalupe St., Austin, Secretary.

Western Association of Industrial Physicians and Surgeons, Los Angeles, Hotel Biltmore, May 7. Dr. Christopher Leggo, Crockett, Calif., Secretary.

Western Branch of American Public Health Associaiton, Los Angeles, Hotel Biltmore, May 30-June 1. Mr. Walter S. Mangold, University of California, Berkeley, Calif., Secretary.

GOVERNMENT SERVICES

NAVY

NAVAL INTERNS WANTED

The Navy desires to procure three hundred qualified candidates to the grade of lieutenant (jg) in the Medical Corps of the Reserve to pursue intern training in civilian medical centers during the fiscal year 1950 under the auspices of the Navy Department. Applications for appointment must be filed through the Office of Naval Officer Procurement nearest the place of residence of the candidate. Successful candidates will be appointed lieutenants (jg) in the Medical Corps of the Naval Reserve and ordered to active duty at the institution with which they have contracted for the year of training, and they will be required to serve on active duty for two years beyond the date of completion of intern training. Candidates must be graduates or enrolled in the fourth year class of an approved medical school and otherwise meet the standards for appointment in the Naval Medical Reserve. Furthermore, they must have contracted for a rotating internship of twelve months for a year in an approved civilian hospital.

An additional two hundred internships will be provided in sixteen Naval hospitals during the fiscal year. These candidates have already been selected, and all quotas for this particular program for placements in Naval hospitals have been filled. A similar program will be conducted next fall for the selection of interns for training during the fiscal year 1951.

BONE BANKS

The Navy's Bureau of Medicine and Surgery will set up Bone Banks in some of its hospitals, according to plans announced recently by Rear Admiral C. A. Swanson, the Surgeon General. "There is sufficient evidence that Bone Banks are now justifiable as a therapeutic provision for Naval hospitals," he declared. Admiral Swanson added that the Navy is currently studying which Naval hospitals should operate such banks. Considered a long step forward in bone grafting, the plan will be made possible by rapidly improving methods of freezing and preserving bone. His announcement was based on a report by Lieut. George W. Hyatt, Navy Medical Corps.

Frozen human bone has been preserved for as long as 308 days in an ordinary ice cream cabinet and then used successfully in bone graft operations. Bone banks visited by Dr. Hyatt during his investigation and study, in addition to the Lahey Clinic of the New England Baptist Hospital, included those at New York Orthopedic Hospital and Dispensary, Boston City Hospital, Mayo Clinic, Massachusetts General Hospital, Campbell Clinic and University of Iowa Children's Hospital.

RECALLED TO ACTIVE DUTY

The following reserve medical officers have been nominated for voluntary recall to active duty: Captain William L. Schafer Jr. of Alexander, Va., and Commanders Robert Z. Collings Jr. of Highland Park, Ill.; Arthur L. Kelly of Chicago, and Bryce A. Newbaker of Washington, D. C.

Lieutenant Merrill E. Speelman of Columbus, Ohio, has been voluntarily recalled to active duty and nominated as a resident in urology at the Naval Hospital in Philadelphia.

FIRST ACTIVE DUTY IN THE RESERVE

The following lieutenants (jg) have been nominated for their first active duty in the Medical Corps Reserve: Paul M. Arnesen, Brooklyn, to a residency in surgery at the Naval Hospital, St. Albans, N. Y.; George E. Cruft, Virginia, Ill., to the Naval Station, New Orleans; Henry H. Fetterman, Allentown, Pa., to the Naval Hospital, Quantico, Va.; Dudley P. Jackson, Bedford, Va., to the Naval Medical Research Institute, Bethesda, Md.

NOMINATED FOR POSTGRADUATE INSTRUCTION

The following medical officers have been nominated for courses in postgraduate instruction under the Graduate Medical Training Program: Lieut. Comdr. Robert A. Conrad Jr., to instruction in radiobiologic research at Argonne National Laboratory, Chicago; Lieut. Comdr. Wayne W. Waters, to a residency in general surgery at the Naval Hospital, Long Beach, Calif.; Lieut. (jg) Frank P. Hammon, to a residency in obstetrics and Gynecology at the Naval Hospital, Oakland, Calif.; Lieut. (jg) Robert W. O'Brien, to a residency in surgery at the Naval Hospital, Chelsea, Mass.

NEW REGULAR OFFICERS

The following reserve medical officers have been appointed to the Regular Navy Medical Corps: Capt. Richard B. Phillips, Boston, Naval Air Station, Oakland, Calif.; Lieut. Comdr. William Manson, Sidney, New York, George F. Geisinger Memorial Hospital, Danville, Va.; Lieut. Sidney D. Bond Jr., Crawfordsville, Ark., Naval Air Station, Memphis, Tenn., and Lieut. (jg) Eugene C. Stone Jr., Newton, Mass., Naval Submarine Base, Pearl Harbor, Hawaii.

PERSONALS

Lieut. (jg) Paul H. Pennypacker, M.C.R., has been nominated for graduate instruction as a resident in internal medicine at the Naval Hospital in Philadelphia.

Lieut. Comdr. Carl W. Deonier of Commerce, Texas, has transferred from active reserve status to the Medical Corps of the Regular Navy.

ADDRESS BY DR. NESBIT

The combined staffs of the units of the Naval Medical Center, Bethesda, Md., were addressed April 12 by Dr. Reed Nesbit, professor of urology, University of Michigan School of Medicine, Ann Arbor, on "Pitfalls in the Diagnosis of Hydronephrosis."

AIR FORCE

AIR FORCE SETS HEALTH RECORD IN 1948

The U. S. Air Force had its "healthiest" year in 1948, according to a preliminary report made by Major General Malcolm C. Grow, Air Surgeon, to the Secretary of the Air Force.

The common respiratory diseases, usually a major cause of hospitalization, accounted for less than one-third of the total admissions at the peak of the respiratory disease season during January and February. Less than 20 per cent of those hospitalized during the rest of the year were in that category.

The venereal disease rate continued a decline begun in 1947 and reached a new low in 1948. Less than 9 man-days per thousand troops per month were lost during 1948 for hospitalization for venereal disease. This is a considerable decrease from 102 man days per thousand troops per month in 1939.

PUBLIC HEALTH SERVICE

STATEMENT ON THE TOXICITY OF DDT

Following a meeting of representatives of the Department of Agriculture, Department of the Navy, Federal Security Agency and the Pan American Sanitary Bureau, the following statement was released concerning the use of DDT in national and international health and economy:

"A number of statements have been published during the last several days which have misled and alarmed the public concerning the hazards of using DDT as an insecticide.

"DDT is a very valuable insecticide which has contributed materially to the general welfare of the world. It has been used with marked success in both the control and prevention of such insect-borne diseases as malaria and typhus and of insects which are destructive to crops and injurious to livestock and infect homes.

"It is well recognized that DDT, like other insecticides, is a poison. This fact has been given full consideration in making recommendations for its use. There is no evidence that the use of DDT in accordance with the recommendations of the various Federal agencies has ever caused human sickness due to the DDT itself. This is despite the fact that thousands of tons have been used annually for the past four or five years in the home and for crop and animal protection. However, minor toxic symptoms may be produced by kerosene and various solvents used in DDT and practically all other insecticidal mixtures.

"Statements that DDT is responsible for causing the so-called 'virus X disease' of man and 'X disease' of cattle are totally without foundation. Both of these diseases were recognized before the utilization of DDT as an insecticide.

"The Food and Drug Administration has not prohibited the use of DDT in spraying dairy cattle and barns. The Federal Food, Drug and Cosmetic Act requires the Food and Drug Administration to insure that the food supply of the American people does not contain any poisonous or deleterious substance that is not necessary in the production of the food. Studies by the Bureau of Entomology and Plant Quarantine have shown that DDT when used on dairy cattle or when present on fodder fed to dairy cattle may appear in the milk. They also say that DDT in small quantities can be detected sometimes in milk following ordinary use of the insecticide for fly control in dairy barns. Because of the vital importance of milk in the diet of infants, children and people of all ages, it is essential that proper precautions be taken to protect the milk supply. Modifications of the recommendation made by the Department of Agriculture on the use of DDT on dairy cattle were made merely as a precautionary measure.

"There is no justification for public alarm as to the safety of the milk supply from the standpoint of DDT contamination."

INDUSTRIAL HYGIENE STATION IN UTAH

The first industrial hygiene field station west of the Mississippi, now being set up in Salt Lake City, will soon be ready to give engineering and laboratory help to Western states for aiding manufacturers in bettering their plant working environments, Dr. Leonard A. Scheele, Surgeon General of the Public Health Service, has announced. When the new field station goes into full operation in June, it will be able to make available to state industrial hygiene agencies an analysis of the atmospheric contaminants of the various working environments in the West.

The field station will be located at the University of Utah, on the outskirts of Salt Lake City, where graduate students in industrial hygiene research may use the field station's laboratories and the station's staff members may assist the university in presenting industrial hygiene to students. The station will be expanded later to give state industrial hygiene departments the benefit of the service's knowledge in industrial medicine and nursing care, as well as engineering and laboratory service.

"Setting up this station is another step in our attack on the 500 million man-days per year of absenteeism from sickness in this country," Dr. Scheele said. "The West, with 30 per cent of the nation's labor force, can do away with a great amount of that toll."

CANCER TEACHING GRANTS

The Surgeon General has approved a total of $451,622 for cancer teaching and control grants to assist nongovernment institutions in the expansion of cancer programs. The grants were recommended by the National Advisory Cancer Council at a recent meeting. Among the grants was a new teaching grant award of $23,339.50 to Vanderbilt University School of Medicine, Nashville, Tenn.; eight other medical schools received $199,898 in continuation grants. Three new control grants amounting to $69,114 will finance a state environmental cancer study in Pennsylvania and two cancer diagnostic tests projects, one at the University of California and one at the University of Colorado.

PERSONAL

Dr. Bernardo A. Houssay of Argentina, who is working as a special research fellow at the National Institutes of Health at Bethesda, Md., has been elected an honorary member of the Washington Academy of Sciences. Dr. Houssay, a Nobel Prize winner, delivered an address on unsolved problems of diabetes.

MISCELLANEOUS

COMMITTEE SURVEYS FACILITIES FOR RESEARCH IN WEST

Twenty members of the Committee on Medical Sciences of the Research and Development Board left Washington by military plane on April 7 to survey medical military facilities for research in the Western part of the United States. The committee has made two previous field trips, one covering the Northeastern section of the country, the other covering the Southeastern and Central Southern states. The committee's itinerary includes Glenview, Ill.; Denver; Berkeley, Calif.; Mare Island, Calif., and Los Angeles. The Committee on Medical Sciences is responsible for a continuous survey, analysis and evaluation of research and development activities in medicine, both within and without the National Military Establishment.

Among those making the tour were Dr. Francis G. Blake, chairman; Dr. Lowell T. Coggeshall, deputy chairman; Dr. John S. Lockwood; Dr. Wallace O. Fenn; Brig. General G. E. Armstrong, U.S.A.; Dr. Joseph F. Sadusk Jr., executive director; Dr. James E. McCormack, deputy executive director; Dr. William H. Fitzpatrick, panel director; Comdr. E. E. Metcalfe, M.C., U.S.N., Navy secretary; Major Hal Bridges, M.C., U.S.A., Army secretary, and Major James B. Nuttall, M.C., U.S.A.F., Air Force secretary.

BROOKHAVEN NATIONAL LABORATORY

A nuclear reactor (atomic pile) and auxiliary laboratories are nearing completion at Brookhaven National Laboratory, Upton, Long Island, N. Y. The reactor has been designed to serve the needs of the scientific, industrial and engineering institutions in the northeastern part of the United States and should be able to support an extensive research program. Dr. William M. Hale, head of the department of bacteriology, University of Iowa College of Medicine, Iowa City, has resigned in order to become head of the division of bacteriology and virology in the department of medicine of the Brookhaven National Laboratory, which is one of the projects of the U. S. Atomic Energy Commission.

MORE ATOMIC RESEARCH PROJECTS

The Atomic Energy Commission on April 5 announced that twenty-one research projects on biology and medicine will be financed by the commission on contract with sixteen universities and two hospitals, thus making a total of seventy-eight research studies currently being financed by the commission in addition to the work being done at the major laboratories of the atomic energy program.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

COLORADO

Radio Program Wins Award.—The medical series "Knave of Hearts," which ran for 18 weeks beginning May 2, 1948, over Station KLZ, Denver, was given the "small station" Alfred I. duPont Award for meritorious service on radio March 12. The program idea originated with Mr. Hugh B. Terry, manager of KLZ, and had the support of the Colorado State Medical Society, which named a special committee of cardiologists to work with the station staff in developing the series. This committee was under the chairmanship of Dr. Edgar Durbin, Denver. Mr. Terry was elected by the House of Delegates of the Colorado State Medical Society in September 1948 to receive the society's certificate of service awarded annually to a nonmember for distinguished public service.

Personals.—Dr. James S. Cullyford, Denver, recently received the "Order of Orange Nassau" medal of the Netherlands Government for his service in the medical care and evacuation of Netherland's political prisoners from the concentration camps of Buchenwald and Dachau. Dr. Cullyford was public health officer with the Twelith Army Group in Europe and is now chief of medical service for the Veterans Administration in Colorado.——Dr. Alfred R. Masten, former director of tuberculosis control for the Colorado State Division of Public Health, returned to that post March 1, having resigned from a similar position with the Oregon State Board of Health.

DISTRICT OF COLUMBIA

Study in Environment and Cancer.—The effect of man's environment on his chance of getting cancer will be studied as a new $0,000 project of the Georgetown University School of Medicine under the direction of scientists of the National Cancer Institute, Bethesda, Md. Dr. Wilhelm Hueper, an institute scientist, will direct the project.

Research on Asthma.—A grant of $36,861 to permit studies of the nerve supply of the human lung has been made to the department of surgery of George Washington University Medical School by the Veterans Administration. The grant will provide funds for studies with particular reference to the surgical treatment of asthma. Studies will be continued over a two year period.

Physical Medicine Appointment.—Dr. Isadore Levin has been appointed associate professor of medicine, in charge of the department of physical medicine on the faculty of Georgetown University School of Medicine, Washington. Dr. Levin was in the United States Public Health Service from 1931 through 1933, and was in general practice from 1933 to 1936 in this city. He has been specializing in physical medicine since 1936 and has been director of the physical medicine department at Doctors Hospital since its opening in 1940.

ILLINOIS

Illinois Alumni Luncheon.—At the annual luncheon of the University of Illinois Medical Alumni Association May 17 at the Palmer House, Dr. Andrew C. Ivy, vice president of the University of Illinois in charge of the Chicago Professional Colleges, and Dr. John B. Youmans, dean of the College of Medicine, will speak. The luncheon will be held in conjunction with the annual meeting of the Illinois Medical Society May 16-18. Classes which will hold reunions include those of 1899, 1904, 1909, 1914, 1924, 1929 and 1939. Reservations for the luncheon are $4 per plate. Because of the limited seating capacity, all reservations must be mailed in advance to Dr. Streicher at the University of Illinois, 1853 W. Polk St., Chicago 12.

Chicago

Cancer Research.—The Jennie Rubenstein Memorial Association of Chicago has presented a check for $25,000 to Dr. Ludvig Hektoen to further research on cancer at the Chicago Tumor Institute, of which Dr. Hektoen is president.

Continue Virus Study.—An additional grant of $25,655 from the March of Dimes enables University of Chicago scientists to continue study of the chemical and metabolic processes by which viruses reproduce at the expense of the host cells. The study was begun in 1947 with the aid of the National Foundation for Infantile Paralysis, under the direction of E. A. Evans Jr., Ph.D. Scientists are using viruses other than that of poliomyelitis for the study, but the ultimate aim is to apply the knowledge gained to the growth processes of poliomyelitis virus.

Dr. Dragstedt to Give the Zeit Lecture.—On May 6 at 5 p. m. Dr. Lester R. Dragstedt will speak on "Physiological Principles of Surgery of the Pancreas" at Thorne Hall of Northwestern University. This is the Frederick Robert Zeit Lecture sponsored by the Xi Chapter of Alpha Kappa Kappa. All physicians and surgeons are invited to attend.

Postgraduate Courses in Pediatrics.—The Michael Reese Hospital Postgraduate School will present a course, Recent Advances in Pediatrics, in two sections: Section 1, May 16-21, The Full-Term and Premature Infant in Health and Disease, and Section 2, May 23-28, Diagnostic and Therapeutic Measures in General Pediatrics. Registrations will be accepted for either or both sections. Size of classes is limited, and tuition is $50 per section. For information address Dr. Samuel Soskin, dean, Michael Reese Hospital Postgraduate School, 29th St. and Ellis Ave., Chicago 16.

Radioisotope Unit at Northwestern.—A radioisotope unit which is constituted for instruction, research and therapy has been established at Northwestern University Medical School. Equipment for the unit's laboratories is being financed with a grant in excess of $27,000 from the Atomic Energy Commission through the Office of Naval Research. In addition to providing instruments and other facilities for research involving the use of radioisotopes, the medical school will introduce several new courses into its undergraduate curriculum, and it has formulated a proposed program of postgraduate medical instruction in the utilization of radioactive elements. The third phase of the unit's operations, that of patient therapy, will involve the university's four affiliated hospitals, Wesley Memorial, Passavant Memorial, Evanston, and Children's Memorial, and one of its cooperating institutions, St. Luke's Hospital. For all three operations, the Atomic Energy Commission will supply the radioactive materials from Oak Ridge, Tenn. Radioactive elements will also be made available to the medical school's Montgomery Ward Clinics. Supervised by John A. D. Cooper, Ph.D., assistant professor of chemistry, the laboratory is situated in the Montgomery Ward Building in the university's medical center on the Chicago campus. One of the clinic rooms is being converted into a "hot laboratory" with equipment for handling and processing of multimillicurie shipments of radioactive elements. Personnel of the radioisotope unit is made up of seven men on the faculty of the medical school. Unit chairman is Dr. Howard L. Alt, associate professor of medicine. Others are Dr. Earl E. Barth, Dr. Cooper, Chester J. Farmer, M.A., Dr. Smith Freeman, Dr. George V. LeRoy and Dr. Ray S. Snider. Drs. Alt, Barth, Cooper and Freeman and Mr. Farmer are participating institution members of the Argonne Laboratory. Dr. Snider is consultant to the biologic division at Argonne.

KENTUCKY

Mobile X-Ray Unit Examinations.—Since the $32,000 mobile x-ray unit, donated to the state department of health by the Elks organization of Kentucky, was placed in service in January 1947, more than 120,000 Kentuckians have been given roentgen examinations of the chest without charge. About 3,000 cases of active tuberculosis have been discovered.

Personal.—Dr. Cathryn C. Rotondo, Louisville, has been appointed director of the Division of Maternal and Child Health of the state health department to succeed Dr. Alice D. Chenoweth, Louisville, who resigned in December. Dr. Rotondo received her medical degree from the University of Louisville School of Medicine in 1942.

Cancer Grant to University of Louisville.—A research grant of $4,860 has been awarded the University of Louisville School of Medicine by the Kentucky Division of the American Cancer Society. This grant, the first ever given by this society to the University of Louisville, will be used by Edmund K. Hall, D.Sc., associate professor of anatomy of the medical school, to conduct experiments of animal growth for one year.

Meeting of Tuberculosis Association.—The annual meeting of the Kentucky Tuberculosis Association was held April 6 in Louisville. Frank W. Webster, secretary-treasurer of the Southern Tuberculosis Conference, spoke on "Using the Facilities at Hand in Kentucky to Fight Tuberculosis." Other speakers included A. M. Lyon, state commissioner of welfare, Dr. Earl R. Gernert, radiologist, and Mr. Noble J. Swearingen, field secretary of the Kentucky Tuberculosis Association. Dr. L. E. Smith, executive secretary of the association, presented Mrs. Bert R. Smith, Bowling Green, with the annual loyalty

award given to the person making the greatest voluntary contribution to the antituberculosis fight in the state. Dr. George S. Watson was reelected president.

MARYLAND

Sesquicentennial of Medical and Chirurgical Faculty.—The Medical and Chirurgical Faculty of the State of Maryland observed its sesquicentennial at the annual meeting in Baltimore April 25-27. Guest speakers on the scientific program included:

W. Edward Gallie, Toronto, Canada, Injuries of the First and Second Cervical Vertebrae.

Howard K. Gray, Rochester, Minn., The John M. T. Finny Fund Lecture, Some Problems in the Surgery of the Biliary Tract.

Joseph E. Smadel, Washington, D. C., The Standish McCleary Fund Lecture.

Participants in a panel on Neoplasms of the Chest were Drs. Edward M. Kent, Pittsburgh; Edgar W. Davis, Washington, D. C., and John W. Strieder, Boston. A series of twenty-nine round table luncheons were held.

MASSACHUSETTS

Walter P. Bowers Memorial Building.—A memorial gifts committee for the Walter P. Bowers Memorial building, a three story modern plant of 75 beds in Clinton, is engaged in completing a fund campaign. The sum of $275,000 is essential to take advantage of the federal grant of about $225,000, which will be used to complete the new Clinton Hospital. Dr. Bowers founded the Clinton Hospital in 1889 and served as its first president for fifty years. Work on the new building had started before Dr. Bowers died in 1947, but the original building fund proved inadequate. Dr. Bowers, who was the first editor of the *New England Journal of Medicine*, left $100,000 as his final contribution to the welfare of the communities that he had spent his life in serving. Dr. Henry F. Bigelow of Clinton is chairman of the committee.

Nashoba Associated Boards of Health.—Referred to as an example of "local and individual initiative" in a recent Boston editorial, the Nashoba Associated Boards of Health has been attracting wide citizen and professional interest in Massachusetts. The association is a local health unit organized as a demonstration eighteen years ago by the Commonwealth Fund with the hope that at the end of the five year trial period some of the member towns would decide to support the project on their own. As evidence of its success ten towns voted at the close of the experiment in 1935 to support the unit team of a medical director, director of nursing, sanitarian, laboratory technician and clerks. Nine towns have kept the project going even through the war years with limited services available. In 1948 a medical director and a director of nursing were employed, and the sanitarian returned from his duties in the army. Their immediate objective became that of enlarging the unit, because it was serving only a population of 16,500, far below the desired number of 35,000. A concentrated program of public relations and health education was begun in October. The joint staffs of the unit and the District Health Office of the Massachusetts Department of Public Health worked together to accomplish their goal and have made considerable progress. As of July 1, 25,000 citizens in the Nashoba Valley will have the protection and services of a full time public health team by belonging to the Nashoba Associated Boards of Health. This represents a 50 per cent gain in population served. The essence of this demonstration has been caught in a statement made by Dr. Hugh R. Leavell, president of the Massachusetts Central Health Council, who said, "We feel that this demonstration of cooperation of the towns in that area toward better living is indeed a source of great hope for the future health of our citizens."

MICHIGAN

Hospital Clinic.—The Bon Secours Hospital, Grosse Pointe, will hold a Clinic Day May 24. Among the subjects under discussion will be exfoliative cytology, diabetes, cancer and jaundice. The chairmen of the program will be Drs. Carl W. Swanson, Donald G. Ross and Ira G. Downer.

Ambulance for Premature Babies.—An ambulance especially equipped for premature babies was put into service in Detroit during April. It was purchased by the state, which is lending the vehicle to the city of Detroit. It will be used to remove premature babies from a home, or from a hospital that is not equipped to give the specialized care they require, to a hospital that has facilities for their special care. The ambulance will be available to all Detroit hospitals and physicians. According to Dr. Joseph G. Molner, deputy commissioner of the Detroit Department of Health, so far this year 383 babies have died and 163 of these deaths were from causes related to prematurity.

MINNESOTA

State Medical Meeting at St. Paul.—The annual session of the Minnesota State Medical Association will take place May 9-11 at the Municipal Auditorium in St. Paul. The guest speakers will be Drs. Ralph O. Rychener, Memphis, Tenn.; Howard J. Holloway, Chicago; John H. Randall and H. Dabney Kerr, both of Iowa City; Leonard W. Larson, Bismarck, N. D.; Robert B. Lawson, Winston-Salem, N. C.; Carl P. Huber, Indianapolis; Ralph E. Campbell, Madison, Wis.; Ronald R. Greene, Louis R. Limarzi and Walter L. Palmer, all of Chicago; Gustaf E. Lindskog, New Haven, Conn., and Roy Glenwood Spurling, Louisville, Ky. The program includes a symposium on Orthopedic and Fracture Surgery and another on Research Problems; demonstrations, scientific films and a series of twenty-one round table luncheons. The annual banquet will be held at 7 p. m. May 10 at the Hotel St. Paul; candidates for the Minnesota Fifty Club will be honor guests. The Woman's Auxiliary to the association will meet at the Hotel St. Paul, and several state societies have planned luncheon and dinner meetings. The Russell D. Carman Memorial Lecture will be delivered Monday afternoon by Dr. Kerr on "Roentgen Diagnosis of Lesions of the Urinary Tract." The Arthur H. Sanford Lectureship in Pathology will be presented by Dr. Larson on "The Relation of the Pathologist to the General Practitioner." Scientific and technical exhibits will be on display.

NEW YORK

George Birney Broad Lectureship.—Dr. Arthur T. Hertig of the Harvard Medical School, Boston, will deliver the George Birney Broad Lectureship at Syracuse University College of Medicine May 6 at 8:30 p. m. on the "Earliest Known Stages of Normal and Abnormal Human Development."

Drive Against Infant Diarrhea.—The state's leading public health agencies have launched an intensive campaign against infant diarrhea in New York. Between 1942 and 1947 the state department of health investigated twenty-eight outbreaks of diarrhea of the new born in hospital nurseries, from which 618 babies suffered illness and 62 died. During last year the Medical Society of the State of New York, the New York State Department of Health and the hospitals of the state made a united effort to revise the care of newborn infants and provide better facilities in all hospitals. A new regulation, effective Jan. 1, 1949, was written into the sanitary code of the state. Changes in the care of infants include simple cleansing with baby oil instead of the conventional daily bath with soap and water. Mothers will be asked to do more for the baby themselves, and hospitals will reduce the number of visitors in the maternity sections, or even prohibit them altogether. These are all part of the changes in rearing procedure planned to safeguard the baby.

New York City

Chest Conference at Hospital.—Dr. Richard H. Sweet, Boston, will speak on "Cancer of the Esophagus" at the annual chest conference held May 21 at St. John's Hospital, Brooklyn. Other speakers will be Drs. Merrill N. Foote, Elgie K. Johnson, Herbert C. Maier and Lew A. Hochberg.

Dr. Rappleye Appointed a Vice President at Columbia.—Dr. Willard C. Rappleye, dean of Columbia University, College of Physicians and Surgeons, was recently appointed vice president in charge of medical affairs at Columbia University. General Eisenhower's announcement specified that this position shall be held by the dean of the faculty of medicine. The creation of the new office, among others, resulted from a survey begun nearly two years ago.

Forum for the Study and Prevention of Crime.—Columbia University will hold a forum for the Study and Prevention of Crime at its McMillin Theater May 7. The purpose is to enlighten the public on the social, biologic and psychologic aspects of crime. The program is as follows:

Frederick MacCurdy, Albany, Crime and Mental Hygiene.

George Dession, New Haven, Conn., Law Breakers in a Changing Society.

Mr. Austin H. MacCormick, New York, The Prison's Role in Crime Prevention.

Alfred C. Kinsey, Bloomington, Ind., Sex Offenders.

David Abrahamsen, New York, Family Tension, Basic Cause of Criminal Behavior.

The fee is $2.

Expand Home Medical Care.—The program, started in five municipal institutions last November to enable a patient to receive full clinical care at home after preliminary treatment at a hospital, will be extended to eight other institu-

tions in May. The program was begun to ease the overcrowded conditions in city hospitals. Three hundred and twenty-three patients are now receiving its benefits. A similar plan for tuberculous patients at Triboro Hospital in Queens has also been approved. According to Dr. Marcus D. Kogel, commissioner of hospitals, the department's goal for June 1 is for 500 patients on home care. The cost of treating a patient at a municipal hospital is $10 a day, while the cost for a home care patient is estimated at $2.50 to $3 a day.

PENNSYLVANIA

Diphtheria Closes Schools.—The *New York Times* reported April 12 that all schools in Fountain Hill, a suburb of Bethlehem, were closed "until further notice" because of an outbreak of diphtheria, comprising 14 cases reported in the Bethlehem area and 7 in the St. Luke's Hospital, Fountain Hill. One death occurred in Salisbury Township adjoining Fountain Hill and 1 in nearby Hellertown.

Philadelphia

Lecture on Congestive Heart Failure.—The Mount Sinai Hospital Lecture will be given by Dr. Louis Leiter, New York, on "Pathological Physiology of the Kidney in Chronic Congestive Heart Failure" May 8 at 9 p. m. in the Nurses Home Auditorium.

Society Centennial.—The Philadelphia County Medical Society will hold its centennial dinner May 11 in the ballroom of the Bellevue-Stratford Hotel, 6:30 p. m. The chief speaker will be the Honorable Lister Hill, U. S. Senator from Alabama and a member of the committee that deals with social and health legislation.

Strittmatter Award to Dr. MacFarlane.—The Philadelphia County Medical Society at a meeting April 13 presented the Strittmatter Award to Dr. Catharine MacFarlane, professor emeritus of gynecology at Woman's Medical College of Pennsylvania. Other speakers at the meeting were Drs. Stanley P. Reimann, who spoke on "Cancer Research," and Lewis C. Scheffey, whose subject was "Cancer Detection Clinics."

Fellowship in Endocrinology.—A fellowship in obstetric and gynecologic endocrinology will be available at Jefferson Medical College and Hospital on or about May 1 under the direction of Dr. Abraham E. Rakoff, assistant professor. The fellowship is available to doctors who have had at least one year or its equivalent of postgraduate training in obstetrics and gynecology. Applicants should communicate with Dr. Lewis C. Scheffey, professor of obstetrics and gynecology, Jefferson Medical College and Hospital, Philadelphia 7.

WASHINGTON

Tacoma Roentgen Examination Program.—Tacoma is reportedly the first of five cities to reach its goal of 100 per cent in the recent roentgen examination survey. On March 3, 73,736 chest films had been taken, all but 539 by the survey team. The four U. S. Public Health Service physicians who read the films have reported 1,508 abnormal conditions.

WEST VIRGINIA

Open Branch Public Health Office.—A branch office of public health district no. 2 was opened at East Rainelle, in Greenbrier County early in March, with the full support of the Rotary Club and the Moose Club. The quarters, which are located on the second floor of the Moose Club, will be in charge of Mrs. Halley Mae Thompson, R.N. The office will be open to the public on each Friday afternoon and on the mornings of the second and fourth Saturday. Plans are being made to schedule child health conferences, food handlers' schools and provide other health services in space provided by the Veterans of Foreign Wars in its new building at Rupert, also in Greenbrier County.

Meeting on Anthracosilicosis.—West Virginia members of the American College of Chest Physicians have arranged a program on "Anthracosilicosis" for May 19 at the Daniel Boone Hotel in Charleston beginning at 10 a. m. Speakers on the program will include Drs. Burgess T. Gordon, Hurley L. Motley, Peter A. Theodos and Leonard P. Lang, all on the staff of the Jefferson Medical College Hospital in Philadelphia. The speakers have been making a study of anthracosilicosis, especially among anthracite miners. The program will appeal especially to doctors engaged in practice in coal mining communities. The committee has extended a general invitation to all West Virginia doctors to be present at the meeting.

HAWAII

Annual Meeting of Medical Association.—The Hawaii Territorial Medical Association will hold its annual meeting May 5-8 at the Mabel Smyth Building, Honolulu, under the presidency of Dr. Joseph Palma, Honolulu. Guest speakers will be Drs. Hugh McCulloch, St. Louis; George T. Pack, New York; Hale F. Shirley, San Francisco, and Curtice Rosser, Dallas, Texas. Breakfast round tables will take place at the Pacific Club Saturday morning. The annual exhibit of the Hawaii Physicians' Art Association will be held in the Honolulu County Medical Library during the meeting.

Hansen's Disease Decreasing.—In 1865 Hawaii had an estimated 2,000 to 4,000 cases of leprosy in a population of only 150,000 persons. Today the census has dropped to 293 active cases, although the population has increased to nearly 500,000. Since 1865 the law has required that all persons with leprosy be segregated in a leprosarium. The territory maintains a receiving center, Kalihi Hospital in Honolulu, and a leprosarium, Kalaupapa, on 8,000 acres of a peninsula on the island of Molokai. On Nov. 30, 1948 there were 30 patients at Kalihi Hospital, while eighteen years ago there were 60 new cases a year. Kalaupapa now has 263 leprous patients.

GENERAL

Proctologic Society Meeting.—The American Proctologic Society will celebrate its fiftieth anniversary at its meeting May 31-June 4 at the Deshler-Wallick Hotel in Columbus, Ohio, under the presidency of Dr. Albert G. Schutte, Milwaukee. About twenty members of the Section of Proctology of the Royal Society of Medicine will attend. The British guests who are presenting papers on the program will be: Mr. A. Lawrence Abel, Mr. W. B. Gabriel, M. C. Naunton Morgan, Dr. Cuthbert Dukes, Mr. R. W. Raven, Mr. A. Dickson Wright and Mr. E. C. B. Butler. Other speakers appearing by invitation will be Drs. Charles W. Mayo and John S. Lundy of Rochester, Minn., and Lyon H. Appleby of Vancouver, B. C.

Scholarships for Medical Library Students.—The Medical Library Association is sponsoring two scholarships of $150 each for students taking the medical library course at the Columbia University School of Library Service during the summer quarter of 1949. Funds for this purpose have come from a gift made by the Lilly Research Laboratories. Preference will be given to students giving evidence of an intention to stay in medical library work and who seem to have possibilities of making a real contribution. It is expected that the recipient either has or will have a library school degree at the end of the course. Application should be made to the Columbia University School of Library Service, New York 27.

Science Writing Award.—The third American Association for the Advancement of Science-George Westinghouse Science Writing Award for magazine and newspaper science writing will be presented December 28 to the writer who presents the most distinguished work in interpreting science to the American public. Only entries appearing in magazines published within the continental limits of the United States are eligible. Entries will be judged on initiative, originality, scientific accuracy and clarity. All entries must be postmarked on or before October 3. Entry blanks and additional information may be obtained by writing the Chairman, Managing Committee, AAAS-George Westinghouse Science Writing Awards, 1515 Massachusetts Avenue, N. W., Washington 5, D. C. Separate $1,000 awards are made for newspaper and magazine science writing.

National Hearing Week.—The 123 local chapters of the American Hearing Society throughout the country will conduct educational campaigns in their communities during National Hearing Week May 8-14, by calling attention to the ways in which those who suffer from hearing defects can be helped. Approximately 15,000,000 Americans have impaired hearing, and this figure includes 3,000,000 children. Many of these children can be saved from becoming permanently hard of hearing if the causes are discovered and treatment given in time. The American Hearing Society, whose headquarters are at 817 Fourteenth Street, N. W., in Washington, D. C., is a member of the National Health Council and the National Social Welfare Assembly. Its program is supported by voluntary contributions from the public.

American Academy of Neurology.—The American Academy of Neurology was recently established to further and encourage the practice of clinical neurology and to stimulate the teaching of neurology and allied sciences. Active membership is open to every physician who has been certified in neurology or in both neurology and psychiatry. Junior membership is available to physicians engaged in postgraduate study in neurology or who are awaiting certification in neurology.

Associate membership is open to those not certified in neurology, but whose interests are in fields related to neurology. Its present total membership is approximately five hundred. The first scientific meeting of the academy will be held at French Lick Springs, Indiana, June 1-3. The president of the Academy is Dr. A. B. Baker of Minneapolis; the vice president, Dr. Pearce Bailey of Washington, D. C., and the secretary-treasurer, Dr. Joe R. Brown, whose address is 19 Millard Hall, University of Minnesota, Minneapolis 14.

American Orthopaedic Association Meeting.—The annual meeting of the American Orthopaedic Association will be held at the Broadmoor, Colorado Springs, May 18-21 under the presidency of Dr. Ralph K. Ghormley, Rochester, Minn. Those presenting papers by invitation include:

James V. Luck, Los Angeles, Osteochondromas Arising from Articular Cartilage.
Lieut. Col. Harold S. McBurney, Denver, Orthopedic Treatment of Tuberculosis of the Spine in a Military Tuberculosis Center.
Harold D. Palmer, Denver, Giant Cell Tumors in Children.
John Z. Bowers, Washington, D. C., Effects of Radioactivity on Bone.
John R. Moritz, Sun Valley, Idaho, Ski Injuries—Trauma of Lower Extremities Resulting from Torsion Strain.

Discussion will follow the presentation of each paper. The Wednesday afternoon program will be devoted to a conference on the training of orthopedists, which has been arranged by the Joint Committee on Post-Graduate Education of the American Orthopaedic Association and the American Academy of Orthopaedic Surgeons.

Annual Meetings of Urologists.—The American Urological Association will hold its annual meeting at the Biltmore Hotel, Los Angeles, May 16-19 under the presidency of Dr. Charles C. Higgins, Cleveland. The program includes a symposium on Antibiotics Tuesday afternoon and another on Ureterosigmoidostomy and Cystectomy on Wednesday afternoon. The symposium on Carcinoma of the Prostate involves the essay prize awards for 1949; these were won by Drs. Perry B. Hudson and W. W. S. Butler III, Baltimore, for their "Study of the Enzyme Acid Phosphatase and Its Possible Role in Intermediary Carbohydrate Metabolism of the Prostate Gland and Its Secretion in Dog and Man," and by Dr. William F. Boyer, San Francisco (second prize), for his paper, "Carcinoma of the Prostate: A Cytological Study." The annual Award for Research on the Human Male Reproductive Tract will be presented to Edmond J. Farris, Ph.D., of the Wistar Institute, Philadelphia, who will speak on "Evaluation of Sterility Problems in the Male." The Ramon Guiteras Lecture will be presented Wednesday by Dr. Jean R. Oliver, New York, on "When is the Kidney Not a Kidney?" Motion pictures and scientific and technical exhibits will be shown.

Special Society Elections.—The American Academy of General Practice at its recent meeting in Cincinnati installed Dr. Elmer C. Texter, Detroit, as president, and chose Drs. Stanley R. Truman, Oakland, Calif., as president elect; Ulrich R. Bryner, Salt Lake City, treasurer, and R. B. Robins, Camden, Ark., speaker of the congress of delegates. The Academy has changed its address from 231 W. 47th Street to 406 W. 34th Street, Kansas City 2, Mo.——At the annual meeting of the American College of Allergists in Chicago April 14-17 Dr. Jonathan Forman, Columbus, Ohio, was installed as president and Dr. Charles H. Mitchell; also of Columbus, was made president elect. Dr. Frederick Wittich, Minneapolis, was elected to serve a fifth term as secretary-treasurer.——At the recent meeting of the Tri-State Medical Association of the Carolinas and Virginia, Dr. Russell Buxton of Newport News, Va., became president and Dr. Richard B. Davis, Greensboro, N. C., was made president elect. Dr. James M. Northington of Charlotte was reelected secretary-treasurer.——The National Malaria Society at its annual meeting installed Wendell D. Gingrich, Sc.D., as president and chose Dr. Paul F. Russell, New York, president elect. Martin D. Young, Sc.D., is secretary-treasurer. The American Society of Tropical Medicine chose Dr. Norman H. Topping, Bethesda, Md., as president.

University Programs in Hospital Administration.—The organizational meeting of the Association of University Programs in Hospital Administration was held in New York City December 17-19 with Dr. Arthur C. Bachmeyer, Chicago, as acting chairman. The purpose of the organization is to provide an opportunity for group discussion of common problems, to set standards, to promote development of education in hospital administration leading to a degree and the development of research in hospital administration. Membership in the organization is to be composed of only those courses conducted by universities and leading to a master's or an equivalent degree. To avoid confusion in the placement of students in residencies it was agreed that course directors would not make definite recommendations before February 1 of each year to preceptors on students finishing in May or June. The first notification was to be made between April 1 and April 15 on completed applications and the applicant must apply by May 1, at which time each course would notify other courses of names of students that have been accepted. It was agreed to change the name of administrative intern to administrative resident. The group is to hold another meeting in Chicago this spring.

Traffic Safety Winners.—Massachusetts and Washington, D. C., were named April 13 the grand award winners in the 1948 National Traffic Safety Contest conducted by the National Safety Council. All 48 states and 578 cities participated in the contest, which covered the calendar year of 1948. In addition, 401 municipalities with populations between 5,000 and 10,000 were cited in the Honor Roll section of the contest. The large number of entries reflects increasing concern with the traffic accident problem, the council said. States which won first place in their divisions were: North Carolina, Minnesota, Washington and Massachusetts. Cities which won first place in their population groups were: Washington, D. C., among cities of more than 500,000 population; Syracuse, N. Y., in the 200,000 to 500,000 group; Berkeley, Calif., in the 100,000 to 200,000 group; Jackson, Mich., in the 50,000 to 100,000 group, and Belmont, Mass., in the 25,000 to 50,000 group. Peru, Ind., and Stillwater, Okla., tied in the 10,000 to 25,000 group.

The following special honors were voted: For the outstanding traffic safety performance in the nation, an Award of Merit to Oak Ridge, Tenn.; special award for the achievement of a substantial decrease in traffic accidents during the past three years, Los Angeles; for sustained records of excellence in traffic safety for a period of five or more consecutive years—Clarksdale, Miss., Swampscott, Mass., and Stillwater, Okla. Other special awards included a special honor roll of 92 cities of more than 10,000 population which completed 1948 without a traffic death. The largest of these was Medford, Mass., with a population of 67,477. Massachusetts won the grand award also in 1937. The grand award for Washington was its second. The city first scored in 1946. Contest rules provide that the national grand awards shall go to the state and city which, in the opinion of the judges, came nearest to doing everything practicable for traffic safety.

CORRECTION

Protein Comes Into Its Own.—In the article by this title in THE JOURNAL of April 2, page 899, in line 21 in the right hand column, the word "unpolished" should have been "polished."

Marriages

JEROME RADDING, Portland, Ore., to Miss Marian Jeanne Cohen, Los Gatos, Calif., in San Francisco, March 6.

ROSCOE SEARLS MOSIMAN, New Orleans, to Miss Celia Margaretta Biddle of Albany, N. Y., March 12.

HORACE INGRAHAM CRARY, Northport, N. Y., to Miss Arline Bennett Gardner of Brooklyn, March 19.

JOSEPH J. MILLER, Reading, Pa., to Miss Eleanor Krogman of Laureldale, in Reinerton, March 12.

NATHAN S. HALE, Wilmington, Ohio, to Miss Ruth Margery Brock of Alliance in Columbus, in March.

THOMAS DEE REES, Salt Lake City, to Miss Edith Natalie Bowes in Short Hills, N. J., March 25.

JOHN EUGENE FLYNN, Philadelphia, to Miss Elizabeth Ann Early of Hudson, N. Y., February 26.

ALBERT KREHL SMITH, Salt Lake City, to Miss Beverly Pearl Dew of Norfolk, Va., March 19.

ROBERT D. LONDON, Perth Amboy, N. J., to Miss Ellin Naumburg of New York, March 26.

JAMES J. TRAITZ to Miss Gloria Jeannette Pezzillo, both of Philadelphia, February 26.

WILLIAM V. TROWBRIDGE, Ada, Ohio, to Miss Lois Kathryn Warnke of East Cleveland, March 5.

ROY CRAIG SWAN JR., New York, to Miss Marian Evalyn Morse of Philadelphia, March 26.

WILLIAM RAYNER WATSON to Miss Katherine Vogel Stern, both of New York, March 5.

SAMUEL L. BERANBAUM to Miss Betty Adelaide Samson, both of New York, March 24.

ABRAHAM GELLAR, Brooklyn, to Miss Mildred J. Cable of Chicago, February 6.

Deaths

Edward Loughborough Keyes, New York; born in Elizabeth, N. J., May 15, 1873; College of Physicians and Surgeons, medical department of Columbia College, New York, 1895; emeritus professor of clinical surgery (urology) at Cornell University Medical College, which he joined in 1904 and served continuously with the exception of 1910-1911, when he was professor of urology at the Bellevue Hospital Medical College; adjunct professor of urology at the New York Polyclinic Medical School from 1903 to 1908; member of the American Medical Association and in 1917 member of the House of Delegates; an honorary president and from 1923 to 1935 president of the American Social Hygiene Association, which in 1938 awarded him the first William Freeman Snow Medal for distinguished service in the field of social hygiene; past president of the Clinical Society of Genito-Urinary Surgeons, American Association of Genito-Urinary Surgeons, American Urological Association, Society of Sanitary and Moral Prophylaxis and the International Urological Association; formerly vice president of the New York Academy of Medicine; fellow of the American College of Surgeons; specialist certified by the American Board of Urology; honorary fellow of the Royal College of Surgeons, London; served overseas and was a consultant in urology for the American Expeditionary Forces during World War I; in 1935 was decorated with the Legion of Honor of France; for many years on the staffs of the New York, Bellevue, Memorial and St. Vincent's hospitals; author of "Diseases of the Genito-Urinary Organs" and "A Sea Change"; co-author of "Urology"; died March 16, aged 75.

Leon Hastings Cornwall ✠ New York; born in Alexandria Bay, N. Y., in 1887; Syracuse University College of Medicine, 1910; associate professor of clinical neurology at the Columbia University College of Physicians and Surgeons; member of the American Neurological Association, American Association of Neuropathologists, Association for Research in Nervous and Mental Disease and the American Society of Clinical Pathologists; served on the Mexican border, and in France and Germany during World War I; affiliated with the Neurological Institute of New York, Vanderbilt Clinic, Huntington (N. Y.) Hospital and Kings Park (N. Y.) State Hospital; died in the New York Hospital—Westchester Division, in White Plains, N. Y., March 4, aged 61, of arteriosclerosis.

Archibald Duncan McAlpine ✠ Detroit; born in Glencoe, Ontario, Canada, Jan. 24, 1882; Detroit College of Medicine, 1905; associate professor of clinical surgery at his alma mater, now known as the Wayne University College of Medicine; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; physician for the police and fire departments; served during World War I; for many years chief of the surgical department of Harper Hospital; consulting surgeon at the Woman's and Receiving hospitals; died February 27, aged 67, of coronary thrombosis.

Annina Carmela Rondinella ✠ Wellesley, Mass.; born in Philadelphia in 1874; Woman's Medical College of Pennsylvania, Philadelphia, 1899; member of the New Hampshire Medical Society; consulting ophthalmologist at Wellesley College for many years; affiliated with Simpson Hospital of Wellesley College; at one time on the faculty of her alma mater, Vassar College in Poughkeepsie, N. Y., and the Connecticut College for Women in New London; served on the staff of Morrison Hospital in Whitefield, N. H.; died March 11, aged 74, of arteriosclerosis and hypostatic pneumonia.

Charles Lee Baker ✠ First Lieutenant, U. S. Army, retired, Columbia, S. C.; University of Virginia Department of Medicine, Charlottesville, 1897; veteran of the Spanish-American War and World War I; entered the medical corps of the U. S. Army on March 15, 1927 and retired on the same date for disability in line of duty, under a special act of Congress; died in the Veterans Administration Hospital March 7, aged 77, of Parkinson's disease and cerebral hemorrhage.

Erwin Carter Brandon, Bedford, Va.; Vanderbilt University School of Medicine, Nashville, 1910; served during World War I; medical examiner for the Norfolk and Western Railway; died March 4, aged 60, of cerebral hemorrhage.

Asa Sheldon Briggs, Providence, R. I.; Harvard Medical School, Boston, 1911; for many years assistant superintendent of Rhode Island Hospital; formerly superintendent of the State Home and School for Dependent and Neglected Children; at one time a member of the state penal and charitable commission; died March 9, aged 63, of cerebral hemorrhage.

James David Buchanan, Marion, Va.; Bellevue Hospital Medical College, New York, 1892; formerly mayor and postmaster; member of the staff of the Southwestern State Hospital; director of the Marion National Bank; on the board of George Ben Johnston Memorial Hospital in Abingdon; died in Lee Memorial Hospital February 27, aged 83.

Rudolph Buhman ✠ St. Louis; Marion-Sims College of Medicine, St. Louis, 1894; died February 14, aged 76.

Lucius Constant Bulkley, Claremont, Calif.; Columbia University College of Physicians and Surgeons, New York, 1901; for many years a medical missionary in Siam; died January 20, aged 71.

Charles John Carlin, Joliet, Ill.; the Hahnemann Medical College and Hospital, Chicago, 1912; member of the American Medical Association; past president of the Will-Grundy Counties Medical Society; past president of the Will County Tuberculosis Sanatorium; died February 23, aged 60, of coronary occlusion.

Anthony Bernard Danisawich ✠ South Mountain, Pa.; Jefferson Medical College of Philadelphia, 1922; member of the American College of Chest Physicians; affiliated with the Pennsylvania State Sanatorium number 1; died in St. Mary's Hospital, Rochester, Minn., February 18, aged 51, of complications resulting from chronic pulmonary disease.

Charles Olive Dearmont, White Post, Va.; University College of Medicine, Richmond, 1903; member of the American Medical Association; served as chairman of the county school board; died, February 23, aged 70.

Grover Cleveland DeBolt, Little Rock, Ark.; University of Tennessee College of Medicine, Memphis, Tenn., 1923; member of the American Medical Association; formerly health officer of Rogers; consultant for the Veterans Administration; died February 2, aged 64.

Arthur Murphy Doty, Lexington, Miss.; Memphis (Tenn.) Hospital Medical College, 1899; died in New Orleans February 21, aged 80.

Cyril Dustan, Brooklyn; Long Island College of Medicine, Brooklyn, 1943; certified by the National Board of Medical Examiners; research associate at the School of Public Health of the Faculty of Medicine of Columbia University; died January 21, aged 34.

Lester Lymon Eberhart ✠ Angola, Ind.; Indiana University School of Medicine, Indianapolis, 1930; died January 18, aged 51, of coronary occlusion.

Jacob A. Edelstein ✠ Los Angeles; Fordham University School of Medicine, New York, 1918; died recently, aged 59.

Haickel Alexander Elkourie ✠ Birmingham, Ala.; University of Nashville (Tenn.) Medical Department, 1901; died February 1, aged 68, of coronary thrombosis.

Herbert Calvin Evans, Los Angeles (licensed in California in 1922); died March 21, aged 63, of cerebral hemorrhage.

Christopher Franklin Farmer, Kentwood, La.; Memphis (Tenn.) Hospital Medical College, 1908; died March 2, aged 75.

Edwin Charles Fassett ✠ Kingston, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1904; specialist certified by the American Board of Otolaryngology; served during World War I; on the staffs of the Kingston, Benedictine and Ulster County Tuberculosis hospitals; died February 25, aged 70, of carcinoma.

James Edward Furr ✠ Marks, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1913; served during World War I; medical superintendent and owner of Marks Hospital; died February 22, aged 57, of coronary occlusion.

Samuel Bernard Goldberg, Medford, Mass.; Middlesex College of Medicine, Waltham, 1928; member of the American Medical Association; died January 5, aged 45.

John Francis Golden, Dormont, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1903; member and for many years president of the school board; served during World War I; on the staff of St. Joseph's Hospital in Pittsburgh; died in the Veterans Administration Hospital, Aspinwall, February 22, aged 69, of heart disease.

Joe Davis Goodwin, Nashville, Tenn.; University of Tennessee Medical Department, Nashville, 1892; died February 2, aged 79, of intestinal hemorrhage and rectal carcinoma.

Henry James Goubeaud Jr. ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1920; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; served on the faculty of his alma mater; on the staffs of the Kings County and St. Mary's hospitals; formerly on the staff of the Holy Family Hospital; died February 10, aged 54, of heart disease.

Morris Baldwin Green ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1909; died February 2, aged 62, of arteriosclerotic heart disease.

George D. J. Griffin ✠ Chicago; Northwestern University Medical School, Chicago, 1908; clinical professor of surgery at the Loyola University School of Medicine; fellow of the International College of Surgeons and the American College of Surgeons; served in France during World War I; president of the staff of Mercy Hospital, where he died March 27, aged 61, of carcinoma.

Charles H. Hall, Boothsville, W. Va.; Kentucky University Medical Department, Louisville, 1904; member of the American Medical Association; died March 15, aged 73, of injuries received when struck by a transformer when a truck crashed into a telephone pole under which his car was parked.

James Monroe Hancock, Oakland, Calif.; Chicago College of Medicine and Surgery, 1910; veteran of the Spanish-American War; died February 23, aged 71, of arteriosclerotic heart disease.

Frank Madison Harvin, Columbia, S. C.; Medical College of South Carolina, Charleston, 1907; served overseas during World War I; died in the Baptist Hospital February 23, aged 68.

William Vincent Healey ✠ New York; Cornell University Medical College, New York, 1916; fellow of the American College of Surgeons; served overseas during World War I; formerly on the faculty of the New York Polyclinic Medical School and Hospital; honorary surgeon of the New York Police Department; consulting surgeon at the State Hospital, Kings Park; affiliated with Doctors, Broad Street and Gouverneur hospitals; director of surgery at St. Clare's Hospital, where he died March 9, aged 57.

Floyd Michael Hellwarth, Phoenix, Ariz.; Ohio Medical University, Columbus, 1905; member of the American Medical Association and the Oregon State Medical Society; died February 15, aged 67, of coronary thrombosis.

Leo Charles Henrich, Lincoln, Neb.; Creighton University School of Medicine, Omaha, 1935; served during World War II; member of the staff of Lincoln State Hospital, where he died February 16, aged 39.

Edwin Forrest Hitchcock, New York; Long Island College Hospital, Brooklyn, 1894; died February 28, aged 87.

Edward Michael Iland ✠ Coraopolis, Pa.; Medical Department of the Western University of Pennsylvania, Pittsburgh, 1896; district medical director for Allegheny County; served during the Spanish-American War, on the Mexican Border and in France during World War I; died in the Sewickley (Pa.) Valley Hospital, January 14, aged 77.

William Sebald Keller, Cincinnati; Miami Medical College, Cincinnati, 1904; member of the American Medical Association; formerly senior surgeon in the U. S. Public Health Service Reserve; for many years president of the Cincinnati Social Hygiene Society and a member of the coordinating committee of the Cincinnati Public Health Federation; served on the staffs of Christ and Children's hospitals; died in Clearwater, Fla., March 9, aged 66, of renal insufficiency and arteriosclerosis.

Raymond Hadley Kenan, North Rose, N. Y.; Syracuse University College of Medicine, 1927; member of the American Medical Association; died in the Edward J. Barber Hospital, Lyons, February 15, aged 47.

Reginald John Konopka, Shamokin, Pa.; Middlesex College of Medicine and Surgery, Cambridge, Mass., 1936; died February 23, aged 40.

Herman Henry Lahke, Cincinnati; Miami Medical College, Cincinnati, 1903; died at St. Francis Hospital February 26, aged 72, of prostatic carcinoma.

Priestley Lipscomb ✠ Denton, Texas; Louisville (Ky.) Medical College, 1894; past president of the Denton County Medical Society; died February 15, aged 79, of senility.

Anna Jackson Longshore, Waterloo, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1903; died January 23, aged 80.

Harold Hamilton Longwell, Tyrone, Pa.; Baltimore Medical College, 1910; Medico-Chirurgical College of Philadelphia, 1914; died February 14, aged 66, of coronary thrombosis.

Edward Chadwick McClees ✠ Elm City, N. C.; Medical College of Virginia, Richmond, 1917; died March 4, aged 56, of cerebral hemorrhage.

William Aloysius McCormick, New Bedford, Mass.; Tufts College Medical School, Boston, 1914; member of the American Medical Association; died in Sarasota, Fla., February 21, aged 57, of hypertension and chronic nephritis.

Julius A. McMillan, Nashville, Tenn.; Meharry Medical College, Nashville, 1904; professor emeritus of gynecology at his alma mater; affiliated with Hubbard Hospital, where he died February 22, aged 76, of coronary heart disease.

Archibald Buxton McQueen, St. Petersburg, Fla.; North Carolina Medical College, Davidson, 1902; died February 6, aged 75, of cerebral hemorrhage.

Wallace Lynnville Matlock, Deadwood, S. D.; National University of Arts and Sciences Medical Department, St. Louis, 1918; member of the American Medical Association; died in St. Joseph's Hospital January 24, aged 52, of coronary heart disease.

Adelaide Mills, St. Albans, N. Y.; Eclectic Medical College of the City of New York, 1903; died in the Queens General Hospital, Jamaica, January 21, aged 87.

Charles E. Milson, Catasauqua, Pa.; Hahnemann Medical College of Philadelphia, 1884; died January 1, aged 85, of valvular heart disease.

Charles Edward Murray, Cincinnati; Medical College of Ohio, Cincinnati, 1903; died in the Deaconess Hospital January 1, aged 72.

Adlai Stevenson Oliver Jr., Raleigh, N. C.; Jefferson Medical College of Philadelphia, 1940; member of the American Medical Association; served during World War II; died January 18, aged 32.

Abraham Rothseid ✠ Newark, N. J.; University and Bellevue Hospital Medical College, New York, 1914; died February 24, aged 62, of coronary occlusion and arteriosclerotic heart disease.

Amos Bowman Schnader ✠ Terre Hill, Pa.; Jefferson Medical College of Philadelphia, 1903; on the staff of Lancaster (Pa.) General Hospital; died in St. Joseph's Hospital in Lancaster, January 19, aged 73, of heart disease.

Scott Searles, Los Angeles; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1889; died in California Lutheran Hospital February 13, aged 84, of cerebral thrombosis.

Martha Abbie Winegar Simpson, Glendale, Calif.; Northwestern University Woman's Medical School, Chicago, 1894; died in the Loma Linda (Calif.) Sanitarium and Hospital, January 9, aged 84.

Wilson Jackson Smith, Forsyth, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1900; member of the American Medical Association; past president of the Monroe County Medical Society; died January 3, aged 69, of melanoma of the lung.

Charles Stein, Long Beach, Calif.; University of Louisville (Ky.) Medical Department, 1907; member of the American Medical Association; served during the Spanish-American War and World War I; died January 22, aged 72.

Hack Urquhart Stephenson ✠ Richmond, Va.; Medical College of Virginia, Richmond, 1895; formerly member of the state board of medical examiners; served as surgeon for the Chesapeake and Ohio Railroad; died January 20, aged 76.

Thomas Somerville Stewart ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1901; member of the American Roentgen Ray Society; curator of the microscopical section of the Academy of Natural Science; died February 19, aged 72.

Matthias Ware ✠ West Branch, Iowa; State University of Iowa College of Medicine, Iowa City, 1912; served on the staffs of St. Luke's Hospital in Cedar Rapids and Mercy Hospital in Iowa City, where he died February 14, aged 65, of pulmonary embolism.

Clarence H. Waring ✠ Medical Director, U. S. Public Health Service, retired, Pass Christian, Miss.; Mississippi Medical College, Meridian, 1907; entered the U. S. Public Health Service in August 1914 and retired July 1946; died in Gulfport, February 26, aged 66, of ventricular fibrillation and acute coronary occlusion with infarction.

Olin Heard Weaver ✠ Macon, Ga.; Atlanta Medical College, 1894; fellow of the American College of Surgeons; member of the House of Delegates of the American Medical Association from 1930 to 1947; on the staffs of the Macon and Middle Georgia hospitals; died March 2, aged 75, of coronary thrombosis.

Foreign Letters

PARIS

(From Our Regular Correspondent)

March 10, 1949.

Survival of the Placenta

Professor J. A. Thomas, director, laboratory for experimental cellular biology, had previously obtained the survival of the fetus of mammals which can be used for the massive cultivation of certain viruses by means of prolonged perfusion. This achievement is due to an apparatus devised by the author and his co-workers. As the application of this process to living human organs appeared indicated, the author selected the placenta, the only organ susceptible of being taken without injury to the subject. The first trial, made with the collaboration of Professor Varangot (Port-Royal Obstetrical Clinic), was performed on a placenta obtained at cesarean section, which has survived fifty-three hours. They have recently realized the survival for three days of a placenta normally expelled in the course of delivery. Immediately after delivery, 100 cc. of physiologic dextrose solution, containing 125 mg. heparin, is injected through the umbilical artery into the placenta; the amnion, main cause of infection, is minutely eliminated. After being put temporarily in a bath it is taken to the laboratory, where the preliminary vascular washing is first effected by putting a cannula in one of the two umbilical arteries, the other one being tied and the vein cut. Finally, the placenta is branched on the artificial circulation of the automatic apparatus; the perfusion then occurs in the physiologic direction through the umbilical artery, the return being made through the open vein; the maximum arterial pressure is 70 mm. of mercury, the minimum 20; there are 76 to 90 pulsations to the minute, and the temperature is 38 C. The perfused liquid is a mixture of human stored blood and of a solution containing 5 Gm. dextrose per liter and 1 Gm. sulfamethazine (N-4,6-dimethyl-2-pyrimidyl sulfanilamide); penicillin and streptomycin are added. Under these conditions neither the perfusion fluid nor the placenta has become infected, even in a case when delivery occurred twenty-four hours after the rupture of the membrane. During the perfusion, which lasted for more than three days and which, according to the authors, could very likely be prolonged, the placenta keeps a normal appearance and consistency.

Organization for Welcoming the World's Medical Corps

This organization, created by the general confederation of the French syndicates of doctors, was inaugurated on February 26, in the course of a reception. Among those present were the representative of the direction of cultural affairs of the Foreign Office, the representative of the Minister for Public Health, cultural attachés to foreign embassies and legations and numerous members of the teaching staff of the faculty and hospitals. Its aim is to put at the disposal of foreign doctors arriving in France an organization capable of rendering them numerous services; i. e., to inform them on scientific and hospital centers as well as on cultural and touristic matters.

The Precursor of the Antibiotic Action of Penicillin

At a recent meeting of the National Academy of Medicine, Justin Godard drew attention to the fact that in 1897 a pupil of the Military Medical School, Ernest Duchesne, presented a thesis entitled "Contribution to the Study of Vital Concurrence in Micro-Organisms; Antagonism Between Molds and Microbes." He is unquestionably the first to have discovered the fact and to have studied its mechanism; from his experiments on guinea pigs he drew possible therapeutic consequences.

ITALY

(From Our Regular Correspondent)

FLORENCE, Feb. 28, 1949.

Congress of Obstetrics and Gynecology

At the Thirty-Ninth Congress of the Italian Association of Obstetricians and Gynecologists in Bologna, Professor Scaglione, University of Palermo, reported on classification and symptomatology of ovarian tumors. He emphasized that because of the high incidence of tumors of the ovaries, the variety of their structure, genesis, clinical course and biologic peculiarities, any actual classification of the tumors based on clinical, biologic or histologic characteristics or based on histogenesis is not exempt from criticism. Miller believes that tumors originating in the membrana granulosa and in the theca are of epithelial nature. Werdt calls attention to the great resemblance which exists between these tumors and the round cell sarcomas of the ovaries, and Rosenstein interprets these neoplasms as mixed tumors, using for them the term sarcocarcinoma of the ovaries. Occasionally the tumor cells may be arranged around the capillaries and may therefore be considered as peritheliomas.

Polymorphism is one of the most important characteristics of numerous tumors causing hormonal hyperfunction of the ovaries, and that is why some authors have stated that one has to deal with mixed tumors, while in reality the different microscopic aspect is the expression of the degree of differentiation and of maturity which had been attained.

From a clinical standpoint forms are observed which may be considered as special types of ovarian carcinoma, while others must be considered as special aspects of ovarian sarcoma; but beside these definitely malignant forms there are benign forms.

Consequently, neither the histologic findings nor the clinical criteria may provide the means for classifying all tumors of the ovary. Not even the biologic concept may serve to solve these problems. If the functional activity is manifested by feminization in certain cases and by masculinization in other cases, associated respectively with an increase in estrus-producing compounds or in androgens, one may not always observe an increase in the androgens in the blood, as occurs in some patients with arrhenoblastoma. And there may be also a regular increase in androgens in the typical forms of hypernephroid tumors, though not in the atypical forms.

There is no consensus on the histogenesis of the "functionalizing" tumors and ovarian tumors in general, and the concepts on which Schiller based his classification were not adhered to by all the authors, many of whom have felt it necessary to employ other criteria of classification.

According to Robert Meyer, ovarian tumors do not originate in the membrana granulosa or in normal elements of the theca, but in undifferentiated elements which survived from the period of embryonal development and which may be observed in the fetal period or at birth. According to Schiller, on the contrary, the tumors of the granulosa would have a mesenchymal origin.

From the clinical point of view, one should ascribe great importance to the functional tumors, studying in detail the clinical picture of the feminizing tumors and of the virilizing tumors but not neglecting the other ovarian tumors for which an early exact diagnosis is imperative because of their high incidence and the grave prognosis which many of them present.

Prof. delle Piane, University of Parma, reported on the second subject, "Biologic Bases and Clinical Criteria of Hemotherapy in the Obstetric and Gynecologic Fields." He demonstrated the peculiar conditions which in practice impose an exact evaluation—in the field of diagnosis and treatment—with regard to the double problem offered by the female as blood donor and recipient in case of blood transfusions. This evaluation requires specific competence, a technical and organizational orientation which do not exist in Italy, and it is highly desirable that this congress should give a decisive impulse to its realization.

V 19

Some reactions observed in the course of hemotherapy may be explained by the difference of sex between the donor and recipient, depending on the menstrual and reproduction cycle of the woman. In the various phases of the menstrual cycle the blood presents biologic characteristics which justify specific utilization in function of the hormone contents of the blood. Women possess a greater capacity than men of replacing blood, probably because they are normally faced with the task of providing for periodic blood losses. Only during menstruation and when this is imminent, the withdrawal of blood is contraindicated because of the possible repercussions on menstruation itself. During the menstrual phases and during the climacteric period the female appears to be less fit to be a donor than during the menopause, during which the peculiar endocrine characteristics of the blood warrant some specific utilizations.

When one considers the female as recipient of hemotherapy, in relationship to the various phases of her sex life, the greatest advantages may be obtained with a hemotherapeutic treatment using the blood of a person with different or strictly antagonistic endocrine orientation. For such motives the utilization of male blood or of placental blood may be indicated. In some syndromes of dysendocrisiasis, the blood of pregnant women seems to be more indicated for hemotherapy. On the other hand, women may not be considered as good blood donors at any time during the puerperal state. Labor and the period immediately after delivery present the phases in which, because of the greater possibility of neuroendocrine, hemodynamic and colloidosmotic imbalance, it may be difficult to institute effective transfusion therapy; consequently prophylactic hemotherapy by transfusions is of great value intrapartum, or better during the phase which immediately precedes birth. The puerperium constitutes a wide field for application of hemotherapy with regard to prophylaxis and treatment of puerperal infection.

DENMARK

(From Our Regular Correspondent)

COPENHAGEN, April 6, 1949.

Bad Medical Advice by Wireless

On the whole, the issue of medical news by the Danish state-controlled wireless is satisfactory. A committee representing the Danish Medical Association acts in an advisory capacity, undertaking to scrutinize and, if necessary, put a blue pencil through articles on medical subjects submitted to it by the wireless service. This scrutiny helps to suppress definitely misleading statements, but passage of it does not necessarily mean that the censors have whole-heartedly endorsed the text they have passed. So far so good, at any rate with regard to important papers put on the program several days in advance. But short items of news, whose value is fleeting, are apt to be dealt with so cursorily that there is little time for submission to a board of censors. In such cases the wireless service itself takes responsibility, and its judgment is nearly always sound. But even Homer has been caught nodding, and recently a short announcement on the air led to sharp protests.

The offender on this occasion was a doctor who had become so impressed by the efficacy of methadone in the treatment of morphomania that he wished the whole world to know what a wonderful discovery it represented. He voiced his enthusiasm also in the press, both medical and lay. Whereupon Professor K. O. Møller issued an emphatic protest from the University Pharmacological Institute. He pointed out that though the drug may have certain beneficial properties in weaning morphomaniacs of their habit, these qualities do not necessarily imply that its chronic misuse is less dangerous than that of morphine. In defense of his action the offender has sought shelter behind the claims made on behalf of the drug by its manufacturers. The obvious retort to this defense is that one is expected to take the claims of manufacturing chemists with a large grain of salt. In Denmark, at any rate, the brochures extolling the merits of certain drugs have not to be submitted by their manufacturers to any medical board of censors.

The Frequency of Cancer of the Lungs

Nearly the whole of the issue of the *Ugeskrift for Laeger* for March 17 is devoted to a series of articles on cancer of the lungs, which, according to a leader in the same number of this journal, is "approximately as common as cancer of the stomach." It is added that the diagnosis of cancer of the lungs and treatment of it as such are much rarer events. In the same leader the statement appears that in men over 35 to 40 years cancer of the lungs is far more common than tuberculosis. In a study of 211 cases of bronchogenic carcinoma observed in hospital in the period 1940 to 1948, Dr. A. V. Möller and Dr. Flemming Raaschou point out that this condition is ten times as common in men as in women, and that it is equally frequent on the two sides of the chest.

Dr. Jens L. Hansen is a keen advocate of bronchoscopy as an aid to early diagnosis. He considers this measure just as safe and just as important as cystoscopy or proctoscopy in their respective fields. When the disease is situated in the larger bronchi ,and it is supposed to be so by Björk in 65 per cent of all cases of bronchial carcinoma, the bronchoscope may clinch the diagnosis at a stage when the roentgenologic findings are negative. But this does not mean that Dr. Hansen is depreciative of roentgen rays in this field, and his three main aids to early diagnosis are the roentgen rays, the bronchoscope and the examination of bronchial discharge for cancer cells. As revealed by this symposium, there seems to be plenty of room for improvement with regard both to early diagnosis and early treatment by operation.

Deaths from Drugs

Recently published statistics have thrown an unflattering light on deaths due to drugs in Denmark. It may be idle to speculate on the benefits derived from the 15,000,000 kroner spent in 1947 on drugs by the sickness insurance societies, but we have the disquieting fact that in 1945 there were as many as 420 deaths from drugs. Dr. Palle Wiingaard has calculated that in this year there were about ten times as many deaths from drugs as from infantile paralysis, and 1 drug death for every 2 deaths from pulmonary tuberculosis. A comparison with other countries is also disquieting. In Denmark in 1944, the drug death rate was 0.19 per thousand, whereas in Norway it was only 0.02 and in England only 0.05 per thousand. During the past twenty-five years the death rate due to drugs has been quintupled, and it has been doubled between 1940 and 1946. The soporific drugs, the barbiturates in particular, are largely responsible for this state of affairs, and in 1945 and 1946 more than 90 per cent of the deaths from poisoning were due to carbon monoxide and soporifics. The fact that the drug death rate is about three times as high in the towns as in the country suggests that the rhythm with which we live our lives often determines the way in which we end them.

The Late Professor Ernst Schmiegelow

Reference was made last November 6 in these columns to the autobiography published by the nonagenarian, Professor Schmiegelow. His death on February 28 of this year ends a most distinguished career. The fates conspired to make Professor Schmiegelow's life singularly sunny. Born on Oct. 13, 1856, he spent his early professional life abroad, largely in Germany, acquiring that cosmopolitan outlook which made him such a welcome guest at international medical meetings. His standing as an otolaryngologist led to his election in 1929 as the president of the first international Otolaryngologic Congress in Copenhagen. Turned 90, he reluctantly abandoned skiing in Norway for the more sedate toboggan, but he was physically and mentally active up to the moment of his death.

Correspondence

ADRENAL CORTICAL HORMONE FOR ARTHRITIS

To the Editor.—Drs. P. S. Hench, E. C. Kendall, C. H. Slocumb and H. F. Polley of the Mayo clinic and Mayo Foundation have studied the effects of an adrenal cortical hormone (compound E), which appears to give some promise of relief in certain forms of arthritis. (*Proc. Staff. Meet., Mayo Clin.* **24**: 181 [April 13] 1949). For the past several years Merck & Co., Inc., has been privileged to participate in this project by collaboration with Dr. E. C. Kendall and under an agreement with the Research Corporation. Compound E was first synthesized in the Merck Research Laboratories, and the details of this synthesis were published in the March 1946 issue of the *Journal of Biological Chemistry*. We have supplied from the limited amounts available the greater part of Compound E for Dr. Hench's clinical work during the past eight months.

It is expected that the publication of Dr. Hench and his associates will lead to widespread interest and demand for Compound E. We regret that we must at this time emphasize that there will be no Compound E available from us except for very limited and essential research.

We are making strenuous efforts to expedite production, but many months will be required to obtain finished material. A highly complicated synthesis is involved. In addition, there is an inadequate supply of raw material to meet anticipated demands. It is believed that a new synthesis must be developed before sufficient Compound E can be made generally available.

The foregoing points are brought to your attention as a matter of information to all concerned and in an effort to avoid, so far as possible, disappointment because of shortage of supplies.

MERCK & CO., INC., Rahway, N. J.

USE OF MIXTURES OF SULFONAMIDE DRUGS

To the Editor:—In their letter to the Editor of Dec. 4, 1948, Drs. Reinhold and Flippin commented that the figure of 6 Gm. excretion of acetylated sulfonamide compound which we assumed for purposes of calculation in our letter of Oct. 2, 1948, was exceedingly high. In our original communication we stated that this figure was used for the sake of simplicity. We concede that it is too high. Nevertheless, it can be shown that the reduction in crystalluria to be expected from the use of sulfonamide mixtures is small, using the figures given by Drs. Reinhold and Flippin for absorption and acetylation.

They state that 4 Gm. of sulfonamide compound would be absorbed and 10 to 50 per cent acetylated. Let us first calculate the amount of sulfonamide compound to be excreted as crystals when 10 per cent is acetylated, assuming a urinary p_H of 5.5 and a urinary output of 1,500 cc. per day. If 10 per cent is acetylated, 90 per cent, or 3,600 mg., is excreted as free sulfonamide compound. The acetylated form does not enter into the calculation here because the small amount is all dissolved. If the 4 Gm. absorbed consisted of equal parts of sulfadiazine and sulfamerazine, then 1,800 mg. of each would be excreted as the free compound. Since the solubilities of sulfadiazine and sulfamerazine are 13 and 35 mg. per hundred cubic centimeters respectively at p_H 5.5 (Gilligan, D. R., and Plummer, N.: *Proc. Soc. Exper. Biol. & Med.* **53**: 142, 1943), 195 mg. of free sulfadiazine and 525 mg. of free sulfamerazine would be dissolved in the 1,500 cc. of urine, leaving 1,605 mg. of free sulfadiazine and 1,275 mg. of free sulfamerazine in crystal form, or a total of 2,880 mg. to be excreted as crystals. On the other hand, if sulfadiazine alone were given, the 3,600 mg. of free compound requiring excretion would give up 195 mg. in solution, leaving 3,405 mg. as crystals. The 400 mg. of acetylsulfadiazine excreted would give up 300 mg. in solution, leaving 100 mg. as crystals. Therefore, a total of 3,505 mg. of crystals would be excreted if sulfadiazine alone were given. The foregoing calculation shows that 625 mg. less of the drug would be excreted as crystals if the mixture were used than if sulfadiazine alone were used.

Similarly, if one calculates the amount of drug to be excreted as crystals when 50 per cent of the sulfonamide compound is acetylated, one finds that 1,590 mg. would be dissolved and 2,410 mg. of both free and acetylated sulfonamide compound would be excreted as crystals when the mixture is given, while 495 mg. would be dissolved and 3,505 mg. of free and acetylated sulfonamide compound excreted as crystals when sulfadiazine alone is administered, a difference of 1,095 mg. (The solubilities of sulfadiazine, sulfamerazine, acetylsulfadiazine and acetylsulfamerazine are 13, 35, 20 and 38 mg. per hundred cubic centimeters, respectively, at p_H 5.5.) Thus, the use of the mixture might be expected to reduce the amount of crystals by 625 to 1,095 mg., while still leaving from 2,410 to 2,880 mg. of crystals in the urine.

Drs. Reinhold and Flippin state that a portion of the excreted sulfonamide compound is maintained in supersaturated solution. It would seem safer to choose a regimen of therapy which does not depend on supersaturation to reduce crystalluria.

In a letter to the Editor on February 1, Dr. David Lehr took exception to the value which we used for the solubility of acetylsulfamerazine at p_H 5.5. He stated that 38 mg. per hundred cubic centimeters is "only half the actual value." There is no agreement on the value of solubility in relation to this compound and because of our familiarity with the careful work of Gilligan and Plummer (*Proc. Soc. Exper. Biol. & Med.* **53**: 142, 1943) we adopted their value of 38 mg. per hundred cubic centimeters. Dr. Lehr selected the higher value stated in the *Acta Chemica Scandinavica*. In support of this value he cited an additional reference, but this paper (Welch, A. D.; Mattis, P. A.; Latven, A. R.; Benson, W. M., and Shields, E. H.: *J. Pharmacol. & Exper. Therap.* **77**: 357, 1943) fails to disclose any experiments on solubility performed at a p_H below 6.

Dr. Lehr questioned the validity of our view that the use of a mixture of sulfonamide compounds gives a false sense of security in the matter of preventing crystalluria, and he tried to support his position by the contention that our calculations were made on the basis of extreme conditions—namely, 1,500 cc. of urine daily, which he regarded as unreasonably low—and on our use of a urinary p_H of 5.5, which he regarded as "the highest possible acidity." It is well known that a urinary output of no more than 1,500 cc. a day is common, especially in febrile patients who lose a large proportion of their water in other ways, and also that a urinary p_H of 5.5 is far from "the highest possible acidity." Such a p_H is commonly found in the urine of patients with infection and fever. Best and Taylor stated the lowest p_H in health to be 4.7. While it is true that the protection against crystalluria afforded by mixing the sulfonamide compounds would be enhanced at higher p_H values, we based our calculations on a more acid urine for the very reason that such urine is more apt to be encountered in patients with infection and fever, and it is in those very cases that the alleged value of mixing sulfonamide compounds to avoid crystalluria is apt to be most misleading.

Confusion would be avoided if it were borne in mind that doubling the solubility of sulfonamide compounds by the use of a dose composed of equal parts of two drugs instead of a similar total dose as one drug does not necessarily reduce crystal formation to one half. By way of illustration, if 20 per cent of the drug excreted is soluble in the urine, doubling the solubility of the drug (by a mixture) to 40 per cent will only

reduce the amount of drug not in solution from 80 per cent to 60 per cent of the total quantity.

In short, it is our position that in the average conditions under which the sulfonamide compounds are employed, the alleged benefits from the use of a combination of sulfonamide compounds with respect to the control of crystalluria are small and frequently negligible. Unless there are some contraindications, we would urge dependence on sufficient sodium bicarbonate together with sulfadiazine as a means of preventing crystalluria, rather than on the use of mixtures of the sulfonamide compounds with the attendant increased risk of drug sensitivity reactions.

SOLOMON GARB, M.D.
LAWRENCE A. JANOFF, M.D.
New York.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Various Centers. June 20-22, Sept. 12-14. *Part III.* June, various centers. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY, INC. *Written.* Various Centers. July 15. *Oral.* Oct. 16-20. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 27.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Philadelphia, June 1-3. *Written.* Oct. 17. Final date for filing application is May 1. Asst. Sec.-Treas. Dr. W. A. Werrell, 1 Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC.: *Oral.* Chicago, May 8-14. Sec., Dr. Paul Titus, 1015 Highland Building, Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* New York, June 11-15; St. Louis, Oct. 15-19; Boston, December. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. *Part, I.* Indianapolis, May 6-7 and Denver, May 13-14. *Part II.* New York City, Jan. 1950. Final date for filing application for Part II is Aug. 15. Address: Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14, Calif.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, May 11-14, Chicago, Oct. 4-7. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Written.* Under local monitors, June 24. *Oral.* Baltimore, May 7-9; Cleveland, Sept. 16-18; New York City, Oct. 21-23; Chicago, Dec. 9-11. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE. Philadelphia, June 4-5. Sec., Dr. R. L. Bennett, 30 N. Michigan Blvd., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Louis H. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH: Washington, D. C., May 14-16. Sec.-Treas., Dr. Ernest L. Stebbins, 615 North Wolfe St., Baltimore.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC. *Special Examination,* October. Place to be announced. Final date for filing application is July 15. December, New York City. Sec. Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY. Atlantic City, June 2-4. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, October 26. Final date for filing application is July 1. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Written,* December. *Oral and Clinical.* Chicago, Feb. 11-15. Final date for receipt of case histories is Sept. 1, 1949. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18, Minn.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 28-30. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ARKANSAS: * Little Rock, June 9-10. Sec., Dr. L. J. Kosminsky. Texarkana, *Eclectic.* Little Rock, June 9-10. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Examination.* San Francisco, June 21-23. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento.

COLORADO: * *Examination.* Denver, June 20-22. Sec., Dr. W. W. King, 831 Republic Bldg., Denver.

DELAWARE: Dover, July 12-14. Sec., Dr. J. S. McDaniel, 229 South State St., Dover.

DISTRICT OF COLUMBIA: * *Written,* Washington, May 9-10. Sec., Dr. George C. Ruhland, 4130 Municipal Bldg., Washington.

FLORIDA: * *Examination,* Jacksonville, June 26-28. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

GEORGIA: *Examination.* June 8-9, Atlanta and Augusta. *Reciprocity.* Atlanta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

GUAM: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam. % F.P.O., San Francisco, Calif.

HAWAII: * *Examination.* Honolulu, July 11-14. Sec., Dr. S. E. Doolittle, 881 S. Hotel St., Honolulu.

IDAHO: Boise, July 11-13. Sec., Miss Estella S. Mulliner, Bureau of Occupational Licenses, 355 State House, Boise.

INDIANA: *Examination.* Indianapolis, June 21-23. Sec. Board of Medical Registration and Examination. Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

IOWA: * *Examination.* Iowa City, June 13-15. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Kansas City, June 1-2. Sec., J. F. Hassig, 905 North 7th St., Kansas City, Kans.

KENTUCKY: *Examination.* Louisville, June 15-17. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville 2.

MAINE: Augusta, July 5-6. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, June 21-24. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 14-15. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

MASSACHUSETTS: *Written.* Boston, July 12-15. Sec., Dr. George L. Schadt, 413 E. State House, Boston.

MISSISSIPPI: Jackson, June 21-22. Asst. Sec., Dr. R. N. Whitfield, State Board of Health, Jackson.

MISSOURI: *Examination.* St. Louis, May 30-31 and June 8-10. Exec. Sec., Mr. John A. Hailey, Box 4, Jefferson City.

NEBRASKA:* *Examination.* Omaha, June 6-8. Dir., Bureau of Examining Boards, Mr. Oscar F. Humbie, 1009 State Capitol Building, Lincoln 9.

NEVADA: Carson City, May 2. Sec., Dr. G. H. Ross, 112 N. Curry Street, Carson City.

NEW JERSEY: *Examination.* Trenton, June 21-24. Sec., Dr. E. H. Hallinger, 28 West State Street, Trenton 8.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 28-July 1. Sec., Dr. Jacob L. Lochner, 23 South Pearl St., Albany.

NORTH CAROLINA: *Endorsement.* Pinehurst, May 9. *Examination.* Raleigh, June 23-25. Sec., Dr. Ivan Procter, 226 Hillsboro St., Raleigh.

NORTH DAKOTA: * *Written,* Grand Forks, July 5-7. *Reciprocity,* Grand Forks, July 8. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, June 15-18. *Endorsement,* Columbus, July 5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, June 8-9. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

PENNSYLVANIA: *Examination,* Philadelphia and Pittsburgh, July. Acting Sec., Mrs. B. G. Steiner, 351 Education Bldg., Harrisburg.

PUERTO RICO: San Juan, Sept. 6-10. Sec., Dr. Luis Cueto Coll, Box 3717, Santurce.

RHODE ISLAND:* *Examination,* Providence, July 7-8. Chief, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Examination.* Columbia, June 27-29. *Endorsement.* Columbia, May 2, June 27-28, Aug. 1, Sept. 5 and Oct. 3. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * *Examination.* Pierre, July 19. Sec., Dr. G. J. Van Heuvelen, Capitol Bldg., Pierre.

TEXAS: *Examination.* Austin, June 16-18. Sec., Dr. M. H. Crabb, 209 Medical Arts Bldg., Fort Worth 2.

UTAH: *Endorsement.* Salt Lake City, May 25. *Examination,* Salt Lake City, July 13-15. Sec., Dept. of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VIRGINIA: *Examination.* Richmond, June 17-18. *Reciprocity.* Richmond, June 16. Dr. K. D. Graves, 631 First St., S.W., Roanoke.

WASHINGTON: * Seattle, July. Sec., Mr. Edward C. Dohm, Department of Licenses, Olympia.

WISCONSIN: * *Examination.* Milwaukee, June 28-30. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.

WYOMING: Cheyenne, June 20. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Feb. 1950. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: Tucson, June 21. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, May 3. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

COLORADO: *Examination.* Denver, June 1-2. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: New Haven, June 11. Exec. Asst., State Board of Healing Arts, Miss Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

FLORIDA: *Examination.* Gainesville, June 11. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

MICHIGAN: *Examination.* Detroit and Ann Arbor, May 13-14. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing 15.

MINNESOTA: *Examination.* June and Oct. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

OREGON: Portland, June 18, Sept. 3 and Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

SOUTH DAKOTA: Vermillion, June 3-4. Dr. G. M. Evans, 310 E. 15th St., Yankton.

TENNESSEE: Memphis, July 8-9. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis 3.

WISCONSIN: Milwaukee, June 4. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Chiropractic: Chiropractic Treatment as Part of "Medical Care."—This was a suit for a declaratory judgment to construe a 1945 law providing for the establishment of a Bureau of Medical Services as permitting the rendering of professional services by chiropractors to persons receiving benefits under the act. The plaintiffs are the State Association of Chiropractic Physicians and six members of the Association's Legislative Committee. The defendants are the State Board of Health and the Council on Medical Care. From a judgment dismissing the case, the plaintiff appealed to the Court of Appeals of Maryland.

A 1945 enactment of the Maryland legislature authorized the State Board of Health to establish a Bureau of Medical Services to "administer a program of medical care in the State of Maryland for indigent and medically indigent persons, or either of such classes; for this purpose the Bureau of Medical Services is hereby authorized to contract with physicians, dentists and hospitals for the medical, dental, surgical and hospital treatment of eligible persons. . . . The State Board of Health may make, ordain, alter, amend or abolish rules and regulations for the administration and government of said Bureau . . . and for the medical care of indigent and medically indigent persons, or either of such classes, which rules and regulations in so far as they are within the power of said Board and are consistent with law, shall be binding on all persons whomsoever. . . ." The State Board of Health made the following rule: "Payment to nonmedical practitioners—For the present the program is paying only for the services of physicians, dentists and registered nurses. No payments are being made for services rendered by chiropractors, osteopaths, naturopaths, chiropodists, optometrists or physical therapists."

One of the individual plaintiffs rendered chiropractic service to recipients of aid from the medical care program, but payment therefor was rejected pursuant to the aforementioned rule. The plaintiffs contended that a true construction of the 1945 act was that thereby there was established, for the persons eligible thereto, a program of medical care, which, in a proper case, included chiropractic treatments and the services of a doctor of chiropractic the same as other medical services and aid; that chiropractic science is a system of healing which does not use drugs or surgical treatment to cure diseases but one the value of which is universally recognized in the treatment of a number of ailments of the human body, and that to deny persons receiving benefits under the medical care program chiropractic aid and treatments when needed deprived them of the very thing the medical care program was established to furnish, to wit, proper medical care. The trial court held that under the act the "program of medical care" does not include chiropractic treatments and the defendants, of course, maintained that this construction of the act is correct.

The chiropractic act provides, among other things: ". . . (*c*) Chiropractic is hereby defined to be a drugless health system, the basic principle of which teaches that disease is caused by interference with the transmission of nerve impulses. The practice of Chiropractic is defined as diagnosis, the location of disaligned or displaced vertebrae of the human spinal column, the procedure preparatory to and the adjustment by hand of such misaligned or displaced vertebrae of the spinal column and its articulations, by any method not including the use of drugs, surgery or obstetrics, nor any branch of medicine, nor osteopathy, for the purpose of relieving such interference." Thus, said the court, the practice of chiropractic is defined by statute as expressly excluding the use of "drugs" or "any branch of medicine" and as based on a healing system and cult which, in its theory of one cause of disease and a panacea or near-panacea in one treatment, is wholly at variance with the science and art of medicine as taught and practiced by physicians. Under the medical practice act, a person is regarded as practicing medicine who shall operate on or prescribe for any ailment of another, but this provision is not applicable "to masseurs, or other manual manipulators who use no other means." These exceptions, among others, have been in the statute since it was first enacted in 1902. Thus, said the court, long before practice of osteopathy or chiropractic was licensed, practice of those callings was excluded from unlawful practice of medicine, not by declaring it to be a lawful practice of medicine without a license, but by declaring it not to be regarded as practice of medicine at all. This still is, and was when the act of 1945 was passed, the statutory distinction between practice of medicine and practice of chiropractic in Maryland. Therefore, a "program of medical care" does not include chiropractic treatment, said the Court of Appeals, and we hold that by a true construction of the statute itself the Board has no power to pay for chiropractic treatment. Accordingly the judgment of the trial court dismissing the plaintiff's complaint was affirmed. *Crider et al v. Cullen et al, 63 A.* (2d) 618 (Md., 1949).

Workmen's Compensation Acts: Malpractice Action by Employee.—This was an action to recover damages for the alleged malpractice of the defendant physician. From an adverse report in the superior court the plaintiff appealed to the Supreme Judicial Court of Maine.

As the result of an accident while employed by a local lumber concern, the plaintiff broke the radius of his left arm at the wrist and the defendant was called in as the attending physician. Through the defendant's alleged negligence in applying only splints and no cast the broken bone did not knit properly, the displacement was not corrected when the splints were removed and permanent partial loss of use of the arm resulted. Following the treatment by the defendant physician, the plaintiff filed a claim for compensation under the workmen's compensation act and obtained an award of specific compensation and a lump sum settlement, both of which were paid. The defendant contended that the present action was barred by the plaintiff's acceptance of the compensation award.

It is well settled at common law, said the court, that in an action for negligence causing bodily injury the negligence or lack of skill of a physician or surgeon, selected with reasonable care, which aggravates or increases the injury, is regarded as a consequence reasonably to be anticipated and a part of the injury for which the original wrongdoer is liable. This principle is applied in workmen's compensation cases when an injury to an employee is aggravated by the negligence of a properly chosen physician or surgeon. If the chain of causation remains unbroken, the resulting disability or death is compensable and an award of compensation includes the original injury and its ultimate results through malpractice. Payment of the lump sum is in full settlement of all compensation to which the employee is or may be entitled.

Under the provisions of the workmen's compensation act of Maine, however, an employee injured in circumstances creating a legal liability in some person other than his employer does not, by claiming and accepting compensation from his employer, lose his right to bring a common law action against such other person. His right to enforce liability in his own name, however, is suspended until the employer, vested by subrogation with the injured beneficiary's right of action, fails to pursue its remedy for thirty days after written demand or waives that right. Failure of the employer to bring suit within the thirty-day period after demand, or waiver of its right of action, reinvests the employee with his original right of common law action, and thereafter he alone can pursue it. If he then sues, the statute enables the injured employee not only to receive the compensation allowed by law from his employer but also to obtain from the tortfeasor such additional damages as he would be entitled to had he elected first to bring suit at common law. It is stipulated, the court said, that the plaintiff made no written demand on his employer or the compensation insurer to bring suit against the physician to recover damages for his alleged malpractice. Therefore, the right to recover against the defendant is now vested in, and can only be enforced by, the employer or the insurer.

Accordingly the case was remanded to the trial court for the entry of a nonsuit against the plaintiff. *Mitchell v. Peaslee, 63 A. (2d) 302 (Maine, 1948).*

Current Medical Literature

AMERICAN

The Association Library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

75:637-786 (May) 1948

Mechanism of Production of Acidosis in Premature Infants by Protein Milk. W. S. Hoffman, A. H. Parmelee and A. Grossman.—p. 637.
*Myocarditis and Pericarditis in Meningococcic Infections. C. U. Lowe and L. K. Diamond.—p. 660.
Value of Routine Roentgenograms of Wrist in Pediatric Service. M. G. Peterman, W. B. Frey and J. D. Kaster.—p. 671.
Dysostosis of Skull, Face and Extremities (Acrocephalosyndactyly). R. W. Buckley and P. I. Yakovlev.—p. 688.

SYMPOSIUM ON ENCEPHALOPATHIES

*What Types of Epileptiform-Like Seizures are Amenable to Surgical Treatment? Surgical Treatment of Epilepsy Due to Atrophic Cerebral Lesions. T. C. Erickson.—p. 712.
Diagnosis of Brain Tumor in Children. T. J. Putnam.—p. 721.
Electroencephalogram in Epilepsy. M. A. Perlstein.—p. 726.
*Treatment of Idiopathic Epilepsy: Introduction of New Drug "Thyphentoin." M. G. Peterman.—p. 734.
Complications of Acute Pyogenic Meningitides. A. L. Hoyne.—p. 741.
Allergic Manifestations in Central Nervous System. B. Ratner.—p. 747.
Convulsions and Acute Infections. J. A. Toomey.—p. 752.

Myocarditis and Pericarditis in Meningococcic Infections.—Lowe and Diamond point out that chemotherapy by reducing the early mortality in meningococcic disease allows the appearance of late complications. The authors report the case of a girl, aged 13, who survived the early days of her disease with the aid of chemotherapy, but experienced severe cardiac complications. She presented evidence of pericarditis, cardiac dilatation, heart failure, peripheral edema, electrocardiographic changes and severe necrotic cutaneous lesions. The acute cardiac dilatation was felt to be due to myocarditis and pericarditis. A pericardotomy was performed. Adhesions and fibrin were encountered under an edematous parietal pericardium, but free fluid was not noted. The epicardium had several irregular, necrotic lesions on its surface, and these presumably involved the myocardium also. Because of the precarious state of the patient lysis of the adhesions and further exploration were not attempted. Oxygen given postoperatively reduced tachypnea, but only morphine relieved the boring pain. There was evidence of cardiac failure. On the morning following operation, pitting edema was present over the tibias, and the liver had enlarged. The pulsus paradoxus was still present. The intake of fluid and salt was restricted. Three days after operation the child's chest was clearer, and the edema had disappeared. Five days postoperatively the temperature fell to normal. The cutaneous lesions, which had been necrotic two weeks before, were now healing. Electrocardiograms were obtained two, four and six months after the onset of illness, and showed a slow return to a configuration that would be considered normal for the patient's age. Roentgenograms of the chest showed a gradual return of the heart to normal size.

Surgical Treatment of Epilepsy.—Erickson says that although more than sixty "causes" of epilepsy have been described, it is often impossible to determine the actual cause, and one is then forced to speak of idiopathic or cryptogenic epilepsy. For the purpose of the present discussion, patients with epilepsy may be placed in two general groups: those with and those without demonstrable cerebral lesions. The decision whether operation should be undertaken depends on the presence of positive evidence of a focal cerebral lesion, as judged by the clinical evidence and as confirmed by the results of pneumoencephalographic and electroencephalographic studies. Surgical treatment should not be undertaken for an atrophic lesion unless the evidence from at least two, and preferably three, sources agrees closely. A period of trial with medical therapy is almost always advisable, if the presence of an expanding lesion has been ruled out. The contraindications to operation are, first, the absence of objective evidence of a focal lesion and, second, the presence of diffuse or multiple lesions. The presence of multiple lesions is not an absolute contraindication; for in a few instances multiple, but discrete, cerebral cicatrices have been removed with a subsequent cure of the epilepsy. In most cases multiple cicatrices cannot be removed. For cryptogenic epilepsy, a variety of surgical procedures, such as radical colectomy, oophorectomy and adrenalectomy, have been widely practiced in the past and have been found worthless. Sympathectomy likewise has proved a failure in cryptogenic epilepsy, as has also carotid sinuneurectomy. Encephalography with oxygen or air results in the cessation of seizures in a small percentage of patients, chiefly in children under the age of 16 years. Subtemporal decompression has been tried; but there is no benefit to be derived from the procedure unless the seizures are secondary to a subdural effusion or are associated with a craniostenosis.

Treatment of Idiopathic Epilepsy.—Peterman says that the impending or active convulsion is best treated with sodium phenobarbital given subcutaneously in a dose of 0.016 Gm. to 0.130 Gm. every four hours until the patient has been free of convulsion for twenty-four hours. If the convulsion persists, chloroform or vinyl ether U. S. P. (vinethene®) should be given by inhalation, or tribromoethanol (avertin®) may be given in a dose of 75 mg. per kilogram by rectum. As soon as the convulsion is under control and the patient has regained consciousness, an anticonvulsant preparation should be given by mouth every six hours. Uncomplicated grand mal epilepsy is best treated with phenobarbital. Once the seizures are under control, the drug must be continued in the effective dose for at least one year, or until a normal electroencephalogram is obtained. The drug must never be discontinued abruptly, but should be tapered off gradually for a period of two years. Thyphentoin® (sodium 5,5-phenylthienylhydantoin), a new drug, was tried in over 60 children. It was given in a dose of 0.13 Gm. two or three times a day. This dose was increased when necessary to 0.39 Gm. three or four times a day. When the latter dose did not control seizures, the drug was supplemented in petit mal with tremethadione or in grand mal or combined epilepsy with phenobarbital. The author is of the opinion that uncomplicated petit mal epilepsy may be treated with thyphentoin,® but the patient should be kept under observation for toxic reactions and the blood count checked every two weeks for evidence of depression of the bone marrow. Children with combined grand and petit mal and/or psychomotor epilepsy may be given a trial treatment with thyphentoin.® Failure of response to this drug, and particularly the recurrence of grand mal seizures, requires the addition of phenobarbital.

American Journal of Psychiatry, New York

105:401-480 (Dec.) 1948. **Partial Index**

Scrutiny, Social Anxiety, and Inner Turmoil in Relationship to Schizophrenia. A. Myerson.—p. 401.
Practical Aspects of Mesantoin Therapy in Epilepsy. J. L. Fetterman and V. M. Victoroff.—p. 410.
Vocational Rehabilitation of Epileptics in Texas. J. L. Otto.—p. 417.
Commitments Under Criminal Sexual Psychopath Law in Criminal Court of Cook County, Illinois. W. H. Haines, H. R. Hoffman and R. A. Esser.—p. 420.
Psychologic and Physiologic Effects of Intravenous Pervitin. J. Levine, M. Rinkel and M. Greenblatt.—p. 429.
*Combined Coramine-Electroshock Therapy in Treatment of Psychotic Excitement. H. D. Fabing.—p. 435.
Electroencephalogram in Postencephalitic Behavior Disorder and Postencephalitic Parkinsonism. S. Levin.—p. 439.
*Summary of 36 Cases of Lobotomy. J. B. Tompkins.—p. 443.
State Mental Hospital as Specialized Community Experience. J. F. Bateman and H. W. Dunham.—p. 445.
Group Psychotherapy with Neurotics. Florence Powdermaker and J. D. Frank.—p. 449.
Problems in Attitude Therapy in Mental Hospital. E. C. Adams.—p. 456.
Plan for Screening, Induction, and Utilization of Man Power. W. Bloomberg.—p. 462.

Combined Nikethamide-Electroshock Therapy in Psychotic Excitement.—This report by Fabing deals with 100 consecutive patients who have been treated by a new method of shock therapy on the neuropsychiatric service at the Christ Hospital, Cincinnati. In this technic the application of electro-

shock is preceded by the intravenous administration of 5 cc. coramine,® known also as nikethamide. The method has proved of value in reducing manic excitement quickly and dramatically with as few as one or two treatments. It has also proved of value in acute confusional excitement, excitement with severe agitated melancholia, paranoid excitement, excitement with schizo-affective states and in selected cases of intractable severe anxiety. It is assumed that nikethamide, an analeptic drug, excites the higher levels of the nervous system chemically; the electroshock stimulus excites these structures electrically. The simultaneous application of both these stimuli produces an excessive, or ultramaximal, stimulus as defined by Pavlov, and the result is the ultraparadoxic state of cortical inhibition, with consequent abolition of the clinical symptom of excitement.

Lobotomy.—Tompkins reviews observations on 36 patients who received individualized postoperative hospital care and psychiatric direction. This care they feel to be of utmost importance and a skill not easily described or taught, but gained by daily observation of the individual patient's reactions to situations and by so manipulating his environment and activities that good habits are encouraged and poor ones eliminated. The author feels that the operation has been of benefit to all but 2 of the 36 patients and has permitted a half to live fairly normal lives at home. None can be said to have no trace of the former illness but many can be said to have made an adjustment which pleases both the patients and their families.

Anesthesiology, New York

9:573-686 (Nov.) 1948

Tachycardia in Children During Anesthesia. Katherine Jackson.—p 573.
Clinical Experience with Methadon (Dolophine). A. C. Kirchhof and N. A. David.—p. 585.
Anesthesia: XXX. Anesthetic Properties of Cyclobutane: Preliminary Report. J. C. Krantz Jr., C. J. Carr, J. F. Vitcha and Marie A. Andersch.—p. 594.
Spinal Epidural Block. E. D. Lawrence.—p. 601.
D-Desoxyephedrine: Comparison with Certain Other Vasopressor Drugs. E. L. Yeakel Jr. and T. H. Seldon.—p. 605.
Differential Spinal Block. V. Use in Investigation of Pain Following Amputation. Julia G. Arrowood and S. J. Sarnoff.—p. 614.
Anesthetic Management for Surgery Within the Thorax: Report of 309 Cases. Katherine Fisher, L. D. Lee, E. E. Stegeman and R. B. Young.—p. 623.
Anesthesia for Thoracoplasty: Use of Pentothal-Curare Mixture Supplemented with Nitrous Oxide-Oxygen. Preliminary Report. E. W. Greif, R. C. Richards and F. A. D. Alexander.—p. 637.
Satisfactory Anesthesia for Fenestration Operation. W. G. Meals.—p. 644.

Annals of Internal Medicine, Lancaster, Pa.

29:765-990 (Nov.) 1948

Bacterial Resistance to Antibiotics. C. P. Miller.—p. 765.
Hereditary Hemorrhagic Telangiectases Associated with Pulmonary Arteriovenous Fistula in Two Members of a Family. J. H. Moyer and A. J. Ackermau.—p. 775.
Pseudohemophilia. H. L. Halliwell and L. Brigham.—p. 803.
Experimental and Clinical Therapeutic Studies on Lymphosarcoma. C. P. Rhoads.—p. 811.
*Abnormal Rapid Rhythms Associated with Digitoxin Therapy. H. D. Levine.—p. 822.
The Heart in the Terminal State: Effect of Intracardial Epinephrine. E. Massie, C. H. Huguley and H. S. Stillerman.—p. 838.
Labile Diabetes: Electroencephalographic Status and Effect of Anticonvulsive Therapy. M. Fabrykant and B. L. Pacella.—p. 860.
Conditions to be Differentiated in Roentgen Diagnosis of Pulmonary Tuberculosis. L. H. Garland.—p. 878.
Protein Balance Studies in Patients with Liver Damage. II. Role of Lipotropic Agents. L. W. Kinsell, G. D. Michaels, H. C. Barton and H. A. Weiss.—p. 881.
*New Treatment for Relief of Obliterative Diseases of Peripheral Arteries. I. Mufson.—p. 903

Abnormal Rapid Rhythms with Digitoxin Therapy.—Levine says that in 7 patients abnormal rapid cardiac rhythms developed (idioventricular rhythms, paroxysmal ventricular tachycardia or interference and dissociation) during a recent fifteen and one-half month experience with digitoxin at the Peter Bent Brigham Hospital. Because they seemed more frequent and insidious than with digitalis leaf the incidence and manner of these toxic reactions were studied in this group and in a comparable group which had received digitalis leaf. The percentile incidence of toxic rapid rhythms was greater in a group of patients receiving digitoxin than in those receiving digitalis leaf, but the difference was not statistically significant. Seven cases of digitalis poisoning among 338 patients receiving digitoxin comprised 3 instances of paroxysmal ventricular tachycardia, 3 of idioventricular rhythm and 1 of interference and dissociation. In 3 cases the dosage of digitoxin was, and in 3 it was not, excessive. In the seventh it may have been excessive. Because of freedom from local toxic effects with digitoxin, these toxic rhythms may be more insidious in their onset than with digitalis leaf. A rising ventricular rate of the sudden regularization of a totally irregular rhythm may serve as clues to the imminence in the one case, or the inception in the other, of these abnormal disturbances of rhythm.

New Treatment for Obliterative Disease of Peripheral Arteries.—Mufson suggests that a procedure which can reproduce the immediate benefits of a sympathectomy, and be repeated if new developments make it necessary, should be a useful means of treating the obliterative peripheral arterial diseases. On the basis of preliminary studies in which radioactive sodium was utilized as a measure of changes in circulation, it was found that the intra-arterial infusion of a dilute solution of histamine could approach this ideal. The author presents his experiences with this method in patients with a severe insufficiency of the peripheral arterial circulation of their lower extremities caused by an endarteritis obliterans due to thromboangiitis or arteriosclerosis. In order to overcome the pressure in the femoral artery the infusion bottle had to be prepared in a special manner. With the method described over five hundred arterial punctures have been made and at no time have complications resulted. The solution consisted of 500 cc. of isotonic sodium chloride to which was added between 1.38 and 2.75 mg. of histamine acid phosphate, equivalent respectively to 0.5 mg. and 1.0 mg. of histamine base. The infusion was given weekly and, if the symptoms were totally disabling, biweekly. The dropping rate was measured in the drip indicator during the diastolic fall in pressure during which inflow into the artery took place. It was found that between 2 and 5 drops per heart beat permitted an erythema of the thigh to develop without subjective symptoms. The author describes the results obtained with this treatment in terms of oscillometric readings of the leg treated and in regard to two factors: The first is the number of blocks the patient is able to walk before he is forced to stop by pain in the calf of his leg; the second is sleep tolerance, which represents the number of hours the patient can lie in bed in a horizontal position before he is awakened by pain in his calf muscles and forced to get out of bed for relief. He found that walking tolerance was raised in more than four fifths of the patients treated and the pain present during sleep was abolished in all.

Archives of Neurology and Psychiatry, Chicago

59:691-858 (June) 1948

Activation of Seizures and Electroencephalographic Disturbances in Epileptic and in Control Subjects with "Metrazol." C. Cure, T. Rasmussen and H. Jasper.—p. 691.
Role of Afferent Impulses in Experimental Convulsions. E. Gellhorn and H. M. Ballin.—p. 718.
Winking-Jaw Phenomenon. R. Wartenberg.—p. 734.
Responses to Thermal Stimuli Mediated Through Isolated Spinal Cord. M. B. Macht and R. A. Kuhn.—p. 754.
*Trypan Red Therapy of Amyotrophic Lateral Sclerosis: Preliminary Report. R. B. Aird.—p. 779.

Trypan Red Therapy of Amyotrophic Lateral Sclerosis.—Aird says that previous studies on the supravital dyes, vital red and trypan red, have shown that these acid dyes lower the permeability of the blood-cerebrospinal fluid barrier and the blood-brain barrier for various test agents, such as cocaine and triphenylphosphite. This effect is associated with the protective action of the dyes in both experimental epilepsy and human convulsive states. There was evidence which suggested that these dyes might have therapeutic value in toxic and degenerative diseases of the central nervous system. The present report is a preliminary account of experiences over the past seven years with the use of these dyes in 12 cases of amyotrophic lateral sclerosis. The report is limited to 12 cases in which a follow-up has been maintained over at least two years. One per cent solutions of vital red and trypan red were prepared with triple-distilled water. The solutions were sterilized after Seitz filtration and injected intravenously with the usual aseptic technic. In most instances 20 cc. of vital red was injected daily for five days, making a total dose of 100 cc. Daily injections of 10 cc. of trypan red were then given for five to eight days, followed

by similar injections every second day for three or four doses and every three or more thereafter up to a total dose of 25 mg. per kilogram of body weight. The course of injections required from four to five weeks and resulted in a brilliant staining of the skin and conjunctival vessels. The scleras were stained a light pink. The dyes were excreted chiefly via the intestine, and secondarily by the sweat glands and the nasal and oral secretions. Illustrative case reports are given to indicate the type of neurologic alterations observed in some cases. Fasciculations were diminished in the majority of patients; the rate of progress was suggestively slowed in nearly half the patients, and an arrest apparently occurred in 2 patients. Although no final conclusions may be drawn from this limited study, the relation between treatment and improvement in several patients appeared more than coincidental, especially in those patients in whom a recurrence of the disease process, following discontinuance of the treatment, was again modified when adequate dye therapy was resumed. The results seem to establish a toxic cause of amyotrophic lateral sclerosis. The study suggests that muscular fasciculation is not a reliable index of the progress of the disease. The results appear sufficiently encouraging to warrant further trial.

New England Journal of Medicine, Boston

239:845-902 (Dec. 2) 1948

Nontuberculous Spinal Epidural Infections. A. P. Heusner.—p. 845.
Progress in Group Psychotherapy: Summary of Literature. W. B. Terhune and J. R. Dickenson.—p. 854.
Local Health Services in Massachusetts. R. E. Archibald, A. Fiore and S. L. Skvirsky.—p. 858.
Further Studies in Use of Furacin in Dermatology. J. G. Downing and F. W. Brecker.—p. 862.
Clinical and Pathological Aspects of Encephalitis. R. D. Adams and L. Weinstein.—p. 865.
Carcinoma of Parathyroid Gland.—p. 894.
Submucous Lipoma of Transverse Colon, with Previous Intussusception. —p. 897.

New York State Journal of Medicine, New York

48:2655-2764 (Dec. 15) 1948

The Female Perineum: Its Structure, Function, and Preservation. R. J. Pieri and F. C. Meyer.—p. 2693.
Some Associated Eye and Skin Manifestations of Systemic Disease. I. Givner.—p. 2700.
Nutritional Requirements in Convalescence. H. Pollack and J. Bookman. —p. 2706.
*Postoperative Iridocyclitis. A. C. Snell Jr.—p. 2710.
*Prevention of Deafness by Elimination of Hypertrophied Lymphoid Tissue in Nasopharynx by Radium Therapy. J. C. Scal.—p. 2715.
Intraperitoneal Use of Streptomycin. A. A. Zingaro.—p. 2718.
Hydrolyzed Oral Hay Fever Antigens. H. M. Feinblatt and E. A. Ferguson Jr.—p. 2720.
Fallacy of Hydrochloric Acid Interpretations in Gastric Surgery. E. O. Finestone.—p. 2724.
Radiographic Pneumoperitoneum in Acute Perforations of Gastrointestinal Tract. S. A. Kornblum.—p. 2726.

Postoperative Iridocyclitis.—Snell believes that the incidence of iridocyclitis following intraocular surgery indicates a causal relationship between surgery and iridocyclitis. Reviewing the mechanisms by which surgical interference can provoke intraocular inflammations, the author lists the following factors: tissue traumatization, lenticular remains, intraocular hemorrhage, loss of vitreous, neurotrophic effects, low grade bacterial infection, virus infection, intraocular foreign bodies and allergic reactions to uveal pigment.

Hypertrophied Lymphoid Tissue and Deafness.—Scal shows that irradiation has proved beneficial in conductive deafness due to obstruction of the pharyngeal end of the eustachian tube by hypertrophied lymphoid tissue. Radium is superior to roentgen therapy for the destruction of hypertrophied lymphoid tissue in the nasopharynx, because a greater dosage of roentgen rays must be used and intervening tissue is apt to be affected. Radium gives off alpha, beta and gamma rays. The irritating alpha rays are completely absorbed and screened by the walls of the metal applicator. The beta rays are absorbed by the superficial layers of the tissue, and the therapeutic gamma rays give the desired effect by acting on the nuclei and germinal centers of the cells, causing their disintegration and thus inhibiting mitosis. This prevents the further growth and functioning of the new lymphocytes to replace those destroyed, so that the mass of hypertrophied lymphoid tissue shrinks and disappears completely. The basis of this report is a series of 50 patients treated by the author, most of whom were referred for impairment of hearing, repeated attacks of nasal colds and infected ears. The results obtained were gratifying, as most of these patients showed improvement, while some even experienced a return to normal hearing. A few typical cases are reported. This therapy also eliminates the source of infection which may account for bronchitis and asthma in children. Aviators and passengers in planes who experience hearing disturbances following rapid descent from high altitudes should seek immediate treatment to eliminate causes which may interfere with proper ventilation of the middle ear. Where hypertrophied lymphoid tissue is found in the nasopharynx, radium therapy should be applied to prevent progressive deafness.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

23:471-578 (June) 1948

Studies on Edible Yeasts. J. A. Goyco and C. F. Asenjo.—p. 471.
Use of BAL in Heavy Metal Poisoning, with Particular Reference to Antimonial Intoxication. D. S. Stevenson, R. M. Suárez Jr. and E. J. Marchand.—p. 533.

Review of Gastroenterology, New York

15:867-958 (Dec.) 1948

Effect of Antitoxic Principle upon Hepatobiliary Diseases. J. Nasio. —p. 877.
Clinical Gastroenterology. H. W. Soper.—p. 911.
*Case of Carcinoma of Rectum Diagnosed by the Cytologic Method. L. L. Mackenzie and E. L. Hecht.—p. 915.
Diverticulosis and Carcinoma of the Colon. S. M. Gilbert.—p. 917.
Symptomatology of Peptic Ulcer. F. Vogel.—p. 922.

Carcinoma of Rectum Diagnosed by Cytologic Method.—Mackenzie and Hecht say that at the gynecologic cytology laboratory of the New York Post-Graduate Medical School and Hospital they have been utilizing the smear technic in suspected lesions of the large bowel in an attempt to determine the efficiency of this method in early diagnosis. The patient whose case is reported was a woman, aged 56, who was complaining of alternate attacks of diarrhea and constipation of seven months' duration. Three aunts had died of cancer of the breast. The patient herself had had a hysterectomy at 38 years of age and a thyroidectomy for adenoma of the thyroid. Her present illness had begun with bouts of diarrhea characterized by frequent, loose bowel movements with traces of blood. She was treated medically for hemorrhoids with symptomatic relief. In the four months prior to admission, progressive constipation became the most prominent symptom. By sigmoidoscopy a lesion was seen. Smears taken from the rectum by means of a bulb pipet showed large numbers of typically malignant cells. The patient was subjected to an abdominoperineal resection of the rectosigmoid. Microscopic sections through the tumor mass revealed adenocarcinoma infiltrating all coats. The patient's postoperative course was uneventful. She was discharged on the nineteenth postoperative day, in good condition. This case illustrates the importance of the smear technic in malignant neoplasms of the large bowel.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

56:605-664 (Dec.) 1948

*Costal Arch Resection—A Substitute for Transthoracic Approach to Upper Abdominal Pathology. L. P. Gambee and A. Ingala.—p. 605.
Maternal Mortality: Analysis of Ten Year Period (1937-1946) at Cincinnati General Hospital. R. D. Bryant and N. S. Assali.—p. 611.
Common Surgical Problems in Pediatrics. M. McKirdie.—p. 619.
Bilateral Simultaneous Tubal Pregnancy. R. R. Maier.—p. 624.
Report of Two Cases of Primary Ovarian Pregnancy with Review of Literature. A. Bernstein and H. C. Bernstein.—p. 627.

Costal Arch Resection a Substitute for the Transthoracic Approach.—Gambee and Ingala have found a resection of the costal arch on the left a useful substitute for the transthoracic approach to pathologic conditions situated under the left diaphragm. The authors describe and illustrate the technic and stress that the costal arch is the major obstacle in gaining access to the subdiaphragmatic viscera. Adequate access to these viscera can be obtained by transecting the recti and extending the incision over the costal arch so that it can be removed. The pleural cavity is not invaded. Closure and healing of this incision has been remarkably free of complications or sequelae. The maximum advantage cannot be gained by this approach unless the surgeon stands on the left side of the operating table.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Lancet, London

2:877-914 (Dec. 4) 1948

Scientific Construction of Normal Child's Diet. A. Brown.—p. 877.
*Surgery of Portal Hypertension: Account of 16 Cases. J. R. Learmonth and A. I. S. Macpherson.—p. 882.
Hemophilus Influenzae Mennigitis: Four Cases Treated with Streptomycin. Janet D. Roscoe and M. H. Gleeson-White.—p. 885.
Folic Acid in Treatment of Agranulocytosis. J. H. Waelsch.—p. 888.
Paracentesis in Pyopericardium. W. E. Gibb.—p. 891.

Surgery of Portal Hypertension.—Learmonth and Macpherson report their experiences on 16 patients subjected to operation in the hope of relieving the symptoms of portal hypertension, either by constructing venous shunts, or, when the portal obstruction was limited to the splenic vein, by splenectomy alone. The authors cite 9 patients in whom lienorenal venous anastomosis was done. In 6 of the 8 who survived this operation, there has been no further hematemesis after intervals varying from four to twenty-four months, and their general condition has been much improved. In 3 other patients performance of a lienorenal anastomosis was intended, but this intention had to be abandoned because the available veins were unsuitable, and splenectomy was done instead. In 1 patient with extreme cirrhosis and ascites only laparotomy was done. This patient died twenty-eight days after operation. In 3 other patients the obstruction to the portal circulation was in the splenic vein and the hematemesis, which was the main symptom, was due to hemorrhage from grossly dilated collaterals about the cardia which connect the vasa brevia to the systemic circulation and to the left gastric vein. The liver was normal and ascites absent; the history was characteristically episodic, incidents of bleeding, beginning even in infancy, being separated by long intervals of health. In these patients splenectomy has been a satisfactory method.

Medical Journal of Australia, Sydney

2:509-536 (Oct. 30) 1948

Histiocytic Reticulosis in Infants. R. D. K. Reye.—p. 509.
Allergic Diseases and the Nose. C. Sutherland.—p. 513.
*Cretinism Associated with Methyl Thiouracil Therapy. G. M. Hone and I. Magarey.—p. 524.

Cretinism Associated with Methylthiouracil Therapy.—Hone and Magarey report the case of a woman, aged 28, in whom signs of hyperthyroidism were discovered while she was in her second month of pregnancy. Treatment with methylthiouracil was instituted and continued throughout her pregnancy. She never showed evidence of excessive dosage of methylthiouracil. A female child was born to her at term without difficulty. The child showed signs of cretinism and died after one day of life. At necropsy the thyroid was found greatly enlarged and microscopic examination revealed much vascular engorgement and increase in fibrous tissue. There was great hyperplasia of the glandular tissue, and the acini, which were lined with low columnar epithelium with central nuclei, contained no colloid. It seems reasonable to ascribe the manifestations of cretinism in this baby to the effects of methylthiouracil, because cretinism recognizable at birth is rare in this region, and also because hyperplasia of the thyroid gland in the newborn is well known to follow the treatment of thyrotoxic mothers with this drug.

Tubercle, London

29:269-292 (Dec.) 1948

*Silent Renal Tuberculosis. J. H. Carver.—p. 269.
Tracheotomy for Tuberculous Laryngeal Stenosis, with Case Report. T. A. W. Edwards.—p. 274.
Tuberculous Cavitation of Lungs in Infancy with Report of Case. T. N. Nauth-Misir.—p. 277.

Silent Renal Tuberculosis.—Carver applies the term silent renal tuberculosis to a form of renal tuberculosis without urinary symptoms. It may exist unsuspected for many years before attention is drawn to it in the course of routine examination, by the occurrence of tuberculosis elsewhere or by the disturbance of neighboring organs such as the stomach and duodenum. Six cases are reported to illustrate this condition. Four of the patients were operated on with satisfactory results. In one case operation was not thought to be necessary, and in another the patient died of miliary tuberculosis and secondary infection. This condition involves the danger of miliary tuberculosis, metastatic tuberculous disease, secondary infection and disturbance of local organs. Operation is indicated in all cases except those in which there have been no symptoms, either general or local, for many years and in which the kidney is small and the calcification dense.

Harefuah, Jerusalem-Tel Aviv

35:55-64 (Oct. 15) 1948. **Partial Index**

*Triangular Shadow in X-Ray Pictures of Lung Taken in Lordotic Position. O. Lichtwitz.—p. 55.
Vaccination Against Tuberculosis with BCG. A. Zifrony.—p. 57.
Intoxication with DDT. R. Sterlinger.—p. 59.

Triangular Shadow in Roentgenogram of Lung Taken in Lordotic Position.—Lichtwitz presents observations on 7 children with tuberculosis. These cases demonstrate the importance of making roentgenograms in the lordotic position, also. Contrary to current opinion the triangular shadows in the lower field of the right lung seen in the lordotic position are only rarely due to an interlobar exudate. They are mostly a manifestation of lobar atelectasis in the middle lobe on the right side. These atelectases, frequently combined with bronchiectatic spots, usually result from the fact that a bronchus is compressed by tuberculous enlargement of lymph nodes of the hilar region. This is a characteristic form of tuberculosis in children and was formerly often referred to as epituberculosis.

Sang, Paris

19:417-520 (No. 7) 1948. **Partial Index**

Influence of Gemellary Pregnancy on Erythroblastosis. L. Hirszfeld, I. Lille-Szyszkowicz and S. Mossor.—p. 417.
Treatment of Leukemias. A. Baserga.—p. 419.
Two Classifications of Rh Factors. P. Moureau.—p. 424.
Late Polynucleosis Due to Benzene. J. Bousser.—p. 430.
Hemorrhagic Thrombopathy Due to Benzene, with Little Deficiency in Thromboplastin in Parallelism to Morphologic Alteration of Platelets. P. Croizat, J. Favre-Gilly and P. Morel.—p. 435.
Myeloid Leukemia with Polynucleosis and Polyglobulism. P. Émile-Weil and S. Perlès.—p. 442.
Average Bleeding Time; Statistical Information. J. Roskam.—p. 448.
*Hemolytic Anemia Produced by Cold Agglutinins. L. Heilmeyer and H. Schubothe.—p. 473.

Hemolytic Anemia Produced by Cold Agglutinins.—Heilmeyer and Schubothe report 4 cases of severe hemolytic anemia with icterus and urobilinuria in patients between the ages of 53 and 74. The patients complained of fatigue, diminished capacity for work and headache. When exposed to cold air they presented pronounced acrocyanosis. The patients felt better in summer. The anemia became worse during winter. One of the patients had a tendency to thrombosis of the veins of the extremities which had been exposed to cold. Examination of the blood revealed a hemolytic anemia with macrocyte regeneration and diminished resistance (Dyke-Young type). The sedimentation rate was increased considerably. At normal room temperature the erythrocyte count could not be carried out because of agglutination of the erythrocytes. The erythrocyte count could be made when the glass tube and the room were heated to 40 C. (104 F.). At this temperature the sedimentation rate was reduced. In 2 of the patients the hemolysis could be proved experimentally by cooling the hand of the patient in an ice bath for ten minutes, and by taking the serum from the cubital vein before and after the bath. It was impossible to take blood from 1 of the patients in a cold room, because thrombosis occurred immediately at the area of puncture. A large thrombus could be removed from the cooled vein. The cold agglutinins which produced the hemolytic anemia were autoagglutinins, isoagglutinins and heteroagglutinins, since they agglutinated not only the patients' own corpuscles when the temperature was reduced, but also those of other persons and of several animals. The prognosis in these cases is unfavorable, and death occurs in the course of several years. It is suggested that this hemolytic anemia may be a late sequela in sensitized persons of an atypical infection with cold agglutinins.

Book Notices

Physical Examination of Selective Service Registrants. Special Monograph No. 15. Volume I: Text [Appendices A-C]. Volume II: Appendices D-E. Volume III: Appendix F. Paper. Pp. 319; 347; 374. Selective Service System, Washington, D. C., 1947; Supt. of Doc., Government Printing Office, Washington 25, D. C., 1948.

These three volumes deal with the record of physical examinations in connection with Selective Service registrants. Volume I contains the text and two appendixes. Volume II is an appendix devoted to the various memoranda and articles governing the procedure of the physical examination of draftees. Volume III is an appendix containing the statistical tables.

Many months of study could be devoted to the details in these publications. The principal significance of these figures at this time is the use made of the alleged percentages of rejections to support of the claim that they reflect a deplorable state of the nation's health. This argument should be settled once and for all by a quotation from these official publications by the United States Government and over the signature of Major General Lewis B. Hershey, Director of the Selective Service System:

In the light of the preceding statements, it is evident that the men examined through Selective Service processes were not altogether representative of the total male population in their age groups. Losses to the examined group resulted from deferments for dependency, occupation or overage, and also from voluntary enlistment. Within the examined group further restrictions on the men availaab'e at certain periods were imposed by nonacceptaance of educationally deficient registrants and those with limited service defects or by changes in standards pertaining to other physical defects.

Another indication of the unreliability of any except the most statistically expert and scrupulously exact interpretations of draft figures is the frequency of major changes in physical standards from January 1942 to February 1946; in these four years there were twenty-nine major changes, or an average of more than one change in every sixty days. In some instances these changes came as close together as thirty days.

Rightly interpreted these draft figures should give interesting and useful information for the improvement of the nation's health through sane extension of public health programs and public health education.

A Method of Anatomy: Descriptive and Deductive. By J. C. Boileau Grant, M.C., M.B., Ch.B., Professor of Anatomy in the University of Toronto, Toronto, Canada. Fourth edition. Cloth. Price, $7. Pp. 852, with 800 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1948.

In this edition many parts have been rewritten, numerous figures have been added to the original list of illustrations, to make a total of 800; about 60 have been redrawn or otherwise improved.

The first section of the volume deals with the generalities of the several bodily systems. Osseous structure is considered from both microscopic and gross aspects. Musculature is described on the bases of fascicular architecture, of physiologic mechanism and of the familiar structural and topographic points of view. In the section on the vascular system, the author considers blood volume, character of arteriovenous anastomoses and the nature of sinusoids, end arteries and cavernous tissues. Many helpful facts are recorded regarding vascular patterns in such special areas as nail bed and lip, cerebrum and spleen, and erectile bodies; topographically different parts are thus grouped on the basis of peculiarity in blood supply. By this scheme the reader is introduced to a rationalizing pattern of study. The nervous, digestive, respiratory, urinary and reproductive systems are similarly treated in this preliminary section. The regional accounts follow, a section being devoted to each of the major subdivisions of the body. A closing section covers the autonomic nervous system, body types, the separate elements of the skeleton.

In each of the sections anatomic detail is handled cleverly through reference to simple mechanical principles; familiar physical concepts are abundantly cited in order to render otherwise difficult structural facts readily manageable. For example, the inguinal canal is likened to a channel whose roof consists of three arcades contributed by a trilaminar wall; the liver is described as resembling an oblong block; the space enclosed by the femoral triangle, with its prolongation as the adductor canal, is likened to a funnel with an elongate spout.

The section on the anatomy of the thorax, in addition to dealing with the regular segregated items, discusses such varied general topics as posture, the alteration in form of bronchial ramification and the development of the heart and great arteries. The section on the anatomy of the head and neck is, like the preceding sections, replete with diagrammatic figures.

The "Method of Anatomy" resembles a manual more closely than it does a standard textbook or a dissection guide. However, it differs from a regular manual in presenting concepts as well as morphologic detail.

The book is unique and ingenious in teaching anatomy in such a way as to stress underlying principles, rather than segregated facts. Only a gifted and experienced teacher could formulate as many valuable notions as Professor Grant has included in his unusual volume.

Professor Grant's provocative volume has replaced the standard textbooks in some laboratories. Even where it has not, the book could most profitably be added to the student's library. For the advanced reader its content is inspiring; the surgical anatomist will find it extremely helpful as a source book for lecture material, and the novice in gross anatomy, who places partial dependence on its text and pictures, will be carried the more enthusiastically through courses which are traditionally too didactic.

General Cytology. By E. D. P. De Robertis, M.D., Department of Biology, Massachusetts Institute of Technology, Boston, W. W. Nowinski, Ph.D., Department of Anatomy, University of Texas Medical School, Galveston, and Francisco D. Saez, Ph.D., Institute for the Investigation of Biological Sciences, Montevideo. Translated by Warren Andrew, Ph.D. Cloth. Price, $5.50. Pp. 345, with 143 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London W.C. 2, 1948.

This is a presentation of the more important methods and the main lines of study now being pursued in modern cytology. Current theories are summarized and attempts are made to correlate them with the results of conventional cytologic investigation. The scope of this book is reflected by the subjects of its main subdivisions: (1) the historical background of the cell theory and the constitution of protoplasm; (2) the chemical and physicochemical organization of the cell; (3) a somewhat detailed presentation of the morphologic organization of the cell and (4) its submicroscopic organization; (5) the morphology and functional significance of cytoplasmic organoids; (6) the plasma membrane and cell permeability; (7) the structure and chemical composition of the nucleus in the interphasic state; (8) the chromosomes and cell division; (9) an extended presentation of cytogenetics; (10) enzymes and cell respiration; (11) the visible manifestations of cellular activity, and (12) differentiation, senescence and death of cells.

A textbook on cytology which would present and document the impact of current physiologic, biochemical and physical chemical research on classical concepts of the cell and on current morphologic research is greatly needed. The compilation of such a text is a formidable task because the range of topics extends from pure physics and physical chemistry to morphologic cytology. In this book, the basic physicochemical concepts are presented at a level somewhere between a well substantiated account for elementary students and the definite language of an advanced treatise. This level of presentation imposes on the authors the necessity for well chosen interpretive statements, which are all too often lacking. Thus one can but question whether the pages on coacervates and on tactoids are sufficiently well documented to provide the student with an accurate description of the subject and whether the brief discussion of crystal structure as determined by roentgen ray diffraction serves its purpose. The student anxious to understand the chemistry of protoplasm will find a more satisfying discussion in several of the chapters in the "Physical Chemistry of Cells and Tissues" by Höber and his collaborators. Similarly, the problems of permeability are handled more authoritatively in Höber's book and in the monograph by Davson and Danielli. One would hope that in a book in which so much attention has been paid to mitosis and meiosis in its genetic aspects there would have

been a discussion of the theories of the forces involved in cell division.

The authors undoubtedly know the difficulty of the job which they have undertaken and realize that the fields considered are too vast to be treated authoritatively in the small confines of this book. However, this presentation will undoubtedly be of great service to students in orienting them to the actively developing fields of modern cytology. The references to significant articles are well chosen. The illustrations are good.

Annual Review of Biochemistry. Volume XVII. Editor: J. Murray Luck. Associate Editors: Hubert S. Loring and Gordon Mackinney. Cloth. Price, $6. Pp. 801. Annual Reviews, Inc., Stanford, California, 1948.

Volume XVII of the Annual Review of Biochemistry lives up to the high quality and usefulness of the preceding books of this series. Included in this review are seven by foreign authors.

Review of this volume concerns biologic oxidations and reductions; nonoxidative enzymes; the chemistry of the carbohydrates, and the immunopolysaccharides; roentgen crystallographic studies of compounds of biochemical interest; the chemistry of the lipids, proteins and amino acids, nucleoproteins, nucleic acids and related substances; metabolism of carbohydrates, lipids, protein and amino acids, and drugs and toxic substances; clinical applications of biochemistry; the biochemistry of hormones, vitamins and their clinical aspects; biochemistry of carcinogenesis; biochemistry of natural pigments, terpenes and alkaloids; photosynthesis, mineral nutrition and hormones of plants; bacterial metabolism; the chemistry of penicillin, ruminant digestion, and physiologic aspects of genetics.

The editors announce the proposed publication in 1950 of several new annual reviews in medicine, plant physiology, psychology and physical chemistry. Many of the topics currently reviewed in the Annual Review of Biochemistry will be transferred, in the future, to the appropriate new volumes.

Clinical Roentgenology of the Digestive Tract. By Maurice Feldman, M.D., Assistant Professor of Gastroenterology, University of Maryland, Baltimore. Third edition. Cloth. Price, $8. Pp. 901, with 641 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1948.

The author has again revised and enlarged his excellent text on roentgenology of the gastrointestinal tract, presenting in twenty chapters all the roentgenologic phases of gastrointestinal tract disease. Each disease entity is thoroughly discussed in classical manner under general discussion, pathology, site, age and sex incidence, clinical signs and symptoms and roentgen diagnosis.

The statistical data which are so well correlated with the subject material are a special feature of the text which enhance its usefulness. These, along with the excellent bibliography which is placed at the end of each section, have earned for this publication a place on the shelf of all gastroenterologists, roentgenologists and, for that matter, general practitioners.

The illustrations are numerous, well selected and usually self explanatory, but they carry their own explanatory notes.

The section on diseases of the gallbladder alone is worth the price of the book. It presents material on the subject which is found in no other text in such easily comprehensible form. The anatomy, physiology and pathology of gallbladder disease are reviewed. The technic of cholecystography is carefully described and the dyes used in the examination are analyzed as to their relative clinical values and contraindications. The postoperative gallbladder is also discussed in detail.

The text will be read, discussed and much referred to by all physicians interested in nutritional disorders.

The Diabetic A B C: A Practical Book for Patients and Nurses. By R. D. Lawrence, M.A., M.D., F.R.C.P., Physician in Charge Diabetic Department, King's College Hospital, London. Tenth edition. Boards. Price, 4s. Pp. 80. H. K. Lewis & Co., Ltd., 136 Gower St., London, W.C1, 1948.

This little volume, written for the layman with diabetes, brings out the practical points in his daily routine of treatment. It is written in simple language. The fact that this is the tenth edition indicates its popularity in England. It includes the following points: What diabetes is and the principles of its treatment; the line rationed diet; examples of diet; insulin treatment; hypoglycemia; what to do when ill; diabetic cooking; recipes and food values, and care of the feet. Thus the author has brought out and summarized the essential points of the understanding of the diabetic condition and the necessary routine of treatment, bringing out many practical points which only a physician thus experienced could do. The line estimation of the food values which has become generally adapted in England is not used in the United States and is at first difficult to follow. It has, on the whole, simplified the dietary routine for the British. The one statement of the author on page 55, "Diabetics who eat fresh vegetables and fruit will receive enough of all the vitamines," interested the reviewer, who has held and taught the same for decades; it could well be followed in this country, where we are flooded with expensive vitamins. "The Diabetic A B C" is a compact, practical and well balanced little work unburdened with unnecessary preaching of unessentials.

Textbook of Chiropody. By Margaret J. McKenzie Swanson, B.Litt., F.Ch.S., Co-founder of Edinburgh Foot Clinic and School of Chiropody, Edinburgh. Cloth. Price, $5. Pp. 212, with 168 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1948.

This book covers much material with which a chiropodist is apt to be confronted. He should know about these disorders and is specifically advised to consult a physician. The book can be read with profit by any one interested in the care of the feet.

Many conditions are mentioned which do not call for treatment by a chiropodist; he must, however, be able to recognize them and to refer them to the appropriate specialist; e. g., a patient often thinks he has a "suppurating corn" when he really suffers from a diabetic ulcer.

The subject matter covers posture and some results of malposture of the foot, skin abnormalities, conditions affecting toe nails, muscles and tendons, bones and joints, the circulation and the nerves. Shoe paddings and foot strappings are well covered.

The illustrations are excellent and a good glossary is appended.

Kosmetik und allgemeine Pathologie. Von Dr. Med. Franz Halla. Paper. Price, $2.50. Pp. 118. Wilhelm Maudrich, Spitalgasse 1B, Wien IX/2; imported by Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1948.

"Kosmetik" according to the author is the "preservation of a good state of health of the skin, or the achievement of such." This booklet was written in an attempt to elucidate the relationship between the skin and systemic disease. The author claims that this relationship has been neglected in the medical literature, but he has apparently neglected the study of several recent publications. The result is a haphazard enumeration of various diseases and their symptoms. Important cutaneous manifestations of internal disorders, such as the frequency of moniliasis in diabetes, ulcers of the skin in colitis and similar relationships, are not mentioned. On the other hand, the author gives vent to several antiquated observations such as that tinea versicolor is an indication of tuberculosis of the lungs! The book is written in a superficial, nonscientific manner and cannot be considered a contribution of merit to the medical literature.

The Clinical Apprentice: A Guide for Students of Medicine. By John M. Naish, M.D., M.R.C.P., and John Apley, M.D., M.R.C.P. With a foreword by Professor J. A. Ryle. Cloth. Price, $4.50. Pp. 200, with 71 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2; John Wright & Sons, Ltd., 42-44, Triangle West, Bristol 8, England, 1948.

The authors of this English textbook, essentially a handbook of physical diagnosis, have provided the medical student with a rather brief familiarization course in the art of the physical examination. The book is strictly elementary and replete not only with descriptions of physical signs and methods but with admonitions of a teacher to his pupils.

It is interestingly written and easy to read and can unquestionably serve the purpose of a refresher study to the student who has just completed his first course or two in physical diagnosis, but it is not meant to be and cannot be substituted for a complete textbook on a skill in the art of medicine which must be taught as requiring thorough study of minute detail without recourse to "shortcuts."

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PROTECTION FROM NOISE

To the Editor:—**Can anything be done to help the person who is extremely sensitive to noise? There is of course soundproofing, but I refer to something portable.**

Amy Weiss, M.D., Chicago.

ANSWER.—It may be granted that some persons are much more responsive to annoyances from noise than others, although in some instances hypersensitivity occurs only on an emotional basis. Protection for the ambulatory person is difficult, and escape from some unwanted sound is almost impossible. Notwithstanding the unfavorable attitude toward ear stopples, such devices of proper selection afford a high degree of protection. Canal irritation sometimes occurs, but this becomes minimal if the stopper is properly fitted and after a period of inurement. A period of adjustment is required just as for comfort in wearing artificial dentures. Lately, an article (Grove, W. E.: The Noise Hazard, *Indust. Med.* **18:** 1 [Jan.] 1949) advocates the wearing of ear muffs inclosing both outer ears. Most persons object to this type of device as attracting too much attention. The wearing of self-made cotton plugs greased with petrolatum is ordinarily without irritation, and some 20 decibels of noise are thus avoided. Unrelated to air-borne noise but instead to floor-borne, the wearing of rubber soles and heels provides a low degree of protection. Additional information may be procured through the National Noise Abatement Council of New York City, but, in general, adequate studies related to the individual are few and inadequate.

RECURRENT HERPES OF PENIS

To the Editor:—**A 30 year old white man gives a history of a recurrent vesicular eruption on the penis for the last seven years. The eruption occurs on an average of every two weeks, so that almost as soon as the eruption involves another crop occurs. A diagnosis of recurrent herpes progenitalis was made, since the typical herpetic eruption could be seen during several office visits. General physical condition is good; a negative Kahn reaction was obtained repeatedly, and in the past many dark field examinations were negative. Contact dermatitis is ruled out—condoms are not used. The patient is married, and unless he is allergic to his wife's vaginal secretions, I cannot account for external irritation. The patient was given seven consecutive smallpox vaccinations at two week intervals and three consecutive treatments with low voltage roentgen rays —75 r each, at weekly intervals, over the penis in the areas where the eruptions usually recur. The eruption continues to recur. Can you suggest further therapy? I am having the patient use 2 per cent aluminum acetate solution (aqueous) but the eruption will recur, dry up, recur ad infinitum.**

M.D., Ohio.

ANSWER.—Sometimes immunity from repeated attacks of herpes can be obtained by vaccinating with the contents of a fresh vesicle. Some physicians prefer this method to vaccination with smallpox vaccine, for the method can be repeated if necessary without risk of any sort to the patient. Others prefer the smallpox vaccine but by intradermal vaccination rather than by the usual scratch or punch method. Usually a tube of vaccine is diluted first with 0.1 cc. of isotonic sodium chloride solution and then injected intradermally every few days if necessary.

GROWING PAINS

To the Editor:—**A boy patient, aged 5, complains of pain in his legs. He wakes up at night crying and screaming, telling his mother that his legs ache and hurt. A thorough examination, including an orthopedic consultation, reveals nothing of significance. What is the treatment of growing pains, or muscular spasms in young children?**

H. W. Stevens, M.D., Wilson, N. C.

ANSWER.—Although no one knows the exact mechanism of growing pains, many believe that they are like a "charley horse" in athletes, and can be prevented by less vigorous exercise and an increased intake of sodium chloride and calcium salts. Heat and massage usually alleviate the pain.

INHERITANCE OF EYE COLOR

To the Editor:—**Is it impossible for two blue-eyed parents to have a brown-eyed child?**

C. B. Shaw, M.D., Huntsville, Texas.

ANSWER.—Inheritance of eye color is more complicated than was formerly believed. One study showed about 5 per cent of brown-eyed children when both parents were blue-eyed.

MOLD SENSITIVITY

To the Editor:—**A boy, age 2½ years, has had eczema since birth and asthma since 1 year of age. The mother has eczema and hay fever. Skin testing showed the baby to be sensitive to many things, especially wheat, rice, rye and molds (Alternaria and Hormodendrum). The eczema cleared one year ago on anti-allergic diet, but the asthma has been increasing in severity. It is relieved by epinephrine but unaffected by antihistaminic drugs and aminophylline. Six months ago he had an attack of pneumonia and was moderately ill. During the last hospitalization, one month ago, he became completely free of wheezing for the first time in one year. Asthma is worse on low pressure days. Relation to other conditions has not been noted. To what would the subsidence of symptoms be attributed? The pediatrician recommends desensitization to the molds Alternaria and Hormodendrum. What could one expect from this desensitization?**

R. S. McClintock, M.D., Charlevoix, Mich.

ANSWER.—The history is essentially that of asthma in a young child who became free when hospitalized. The subsidence of the asthma may be explained by any of a number of possibilities—the end of the mold season, the removal of the child from his allergenic environment at home (dog, dust, etc.), the relative freedom from symptoms following a severe attack and the change of psychologic environment.

As regards the advisability of desensitization with Alternaria and Hormodendrum, not sufficient data are given here to justify an opinion. If the child's allergy is worse from the spring to fall, better in winter, worse on windy or hot days, then clinical mold allergy is probably present and demands desensitization. The results under such conditions can be expected to be satisfactory, although prolonged treatment is usually required.

ZINC CHILLS

To the Editor:—**A patient of mine reports that he and co-workers welding galvanized iron with an electric arc almost always experience chills, dizziness and aching throughout the body, sometimes associated with nausea. There is an exhaust system in the plant and they wear a mask with some benefit. The condition seems to develop after about four hours of work and they recover spontaneously in eight to ten hours. I would appreciate any information you can give me regarding etiology and a method of control.**

M.D., Utah.

ANSWER.—This query provides an excellent minor description of "zinc chills" or metal fume fever. The high temperature of the electric arc vaporizes the zinc of the galvanized coating. This condition is always acute, there being no known chronic state or cumulative effects. Some degree of tolerance is acquired, but this may be quickly lost even over a week end of no work. In the absence of full details as to the work operations, possible methods of control must be stated as generalities. 1. If practiced, galvanizing should follow rather than precede welding. 2. The galvanized coating may be removed by chemical stripping of the areas to be welded prior to that operation. 3. If arc welding may be replaced by spot welding, less zinc fume will arise. 4. Work in booths with proper local exhausts will eliminate exposure. 5. The wearing of suitable respirators, however onerous, will afford protection. 6. In some instances, automatic welding may be substituted for hand welding.

Metal fume fever is never direful. However, it constitutes a troublesome, characteristic occupational disease.

TREATMENT OF EPILEPSY

To the Editor:—**Please classify the various forms of petit mal and grand mal and give characteristics of each and treatment for each.**

M.D., Massachusetts.

ANSWER.—Forms of the so-called petit mal triad (J. A. M. A. **129:** 1069, 1945) are: petit mal proper, also called pyknoepilepsy (five to twenty seconds of unconsciousness with only minimal rhythmic clonic movements); myoclonic jerks (sudden, lightning-like flexion of major muscles), and akinetic seizures (sudden loss of postural control). The medicine usually most effective for all three types is trimethadione (tridione®). A grand mal is a generalized convulsion. The most frequently used anticonvulsants are: diphenyl hydantoin (dilantin®), methylphenylethyl hydantoin (mesantoin®) and phenobarbital (luminal®). A convulsion that has one-sided or localizing features (focal grand mal) or one that begins as a "march" of involuntary movement or sensation (jacksonian epilepsy) may call for neurosurgical as well as drug therapy. Trimethadione and methylphenylethyl hydantoin in rare instances prove toxic to sensitive persons. The blood of patients taking these medicines should be examined monthly for evidence of bone marrow toxicity. A more complete discussion and list of drugs will be found in books recently published (e. g.: Cecil, R. L.; McDermott, W., and Wolff, H. G.: A Textbook of Medicine, ed. 7, Philadelphia, W. B. Saunders Company, 1947. Epilepsy, Proceedings of the Association for Research in Nervous and Mental Disease, Baltimore, Williams & Wilkins Company, 1948).

ANEMIA OF LEAD POISONING

To the Editor:—A manufacturing plant in Owosso has a lead poisoning hazard. My belief has been that the anemia that sometimes accompanies lead poisoning is of the secondary type and would respond only to iron therapy and that use of liver extract would be a waste. Does liver extract have any place in the treatment of lead poisoning?

A. L. Arnold, M.D., Owosso, Mich.

ANSWER.—The proper treatment of anemia of lead poisoning is to prevent it by reducing the industrial hazard. This can best be done by reducing dust and fumes.

As for the anemia of lead intoxication, it is due to a peripheral destruction of red cells and not to a primary deficiency in production. Iron, therefore, is the treatment of choice, but in severe conditions liver extract appears to be of some value as well.

GAS GANGRENE ANTITOXIN

To the Editor:—It has been my policy to protect those allergic children under my care who demonstrate moderate or severe degree of sensitivity to horse proteins by active immunization against tetanus, using the two injection technic of tetanus toxoid, renewable annually. In the event of an accidental injury such as an automobile accident the protection mentioned does not protect these children against the possibility of gas gangrene and the complications for which we give polyvalent gas gangrene antitoxin. What is the best procedure in these cases?

M.D., Wisconsin.

ANSWER.—Your plan for active immunization against tetanus is the proper one. A method for active immunization against gas gangrene is lacking. Although it must be granted that gas gangrene as an accompaniment of tetanus could occur in certain types of accidents, it is uncommon. However, should gas gangrene develop in a tetanus patient who has been actively immunized, gas gangrene antitoxin would be indicated, and desensitization should be undertaken if the patient is allergic to horse serum. If the patient had not been actively immunized against tetanus before an attack of the disease, a combination of tetanus and gas gangrene antitoxin could be used.

ASTHMA MEDICATION

To the Editor:—A patient, 7 years of age, complains of asthma. His asthmatic attacks began in 1943 while he was in the Army stationed in Louisiana. The attacks followed a severe attack of bronchitis for which he was hospitalized. At the time he was unrelieved by epinephrine, aminophylline, histamine, hapamine® (a chemical combination of histamine and despeciated horse serum), histaminase or ephedrine. He had complete bronchoscopic studies which were negative. Skin tests showed him allergic to pecans, dust and wheat. He was given a diagnosis at that time of "exertional" asthma. He moved to Indiana after his discharge, and the attacks persisted, but the peculiar thing is that the asthma is present from around 8 p.m. until close to 8 a.m. It does not keep him from sleeping. It occurs at home or anywhere else. The asthma also occurs during emotional trials and undue exertion. He is not bothered by it throughout the day. Physically he is in good health. He weighs 248 pounds (112.5 Kg.), is 6 feet 1 inch (185.4 cm.) tall and has a blood pressure of 130 systolic and 85 diastolic and a pulse rate of 78. During an attack he shows the typical signs of asthma. He has tried the aforementioned medicines including antihistamines without avail.

James D. Kubley, M.D., Plymouth, Ind.

ANSWER.—It is not clear whether the inquirer desires suggestions for symptomatic remedies or diagnostic procedures. Histamine, histaminase and hapamine® are useless in the treatment of asthma. The antihistaminic drugs as they are customarily administered are of little aid in the acute attacks, although they may help in the stage of spasmodic cough. If epinephrine (1:100) inhalations have not been found useful or objectionable, inhalations of isopropyl epinephrine (isuprel,® norisodrine®), are recommended. Persistent cases of this type also usually respond well to iodides, usually 10 grains (0.65 Gm.) of potassium iodide three or four times daily being proper.

An examination of the character of the sputum is not mentioned. If the asthma is of infectious origin the sputum is apt to be greenish or yellowish and will contain many pus cells. If it is allergic, the sputum will probably be colorless and will disclose many eosinophils. The latter observation particularly should suggest a restudy of the patient from the standpoint of allergy. The greater tendency for the asthma to occur during the night hours is not out of the ordinary and does not provide any special clue. Attacks appearing during emotional trials or following undue exertion are also without great significance, since no matter what the primary etiology, emotion and exertion are among a number of secondary factors precipitating asthma. The most important question to be answered in this patient is the question of the type of asthma involved (allergic, infectious, intrinsic or emotional). A more complete investigation should yield this answer.

MALE TRICHOMONAS INFESTATION

To the Editor:—A white male patient aged 28 was first seen on July 8, 1948 with a purulent urethral discharge which suddenly developed about ten days following intercourse. Stained smears revealed many pus cells but no organisms. A wet smear revealed many active Trichomonas organisms. The urine sediment also contained much pus and many Trichomonas organisms. A course of sulfadiazine, 1 Gm. four times a day for five days, had little if any effect on the discharge, but it gradually cleared up on taking methenamine mandelate tablets (two tablets four times a day for ten days). He now continues to have many Trichomonas organisms in the urine, and the prostatic secretion is loaded with pus and Trichomonas organisms. Weekly prostatic massages have not produced improvement. His serologic reactions have remained negative. Is there any satisfactory treatment for Trichomonas infections in the male? M.D., California.

ANSWER.—The eradication of trichomonas vaginalis involves three features: detection of foci of infection, eradication of foci and prevention of reinfection.

Trichomonas vaginalis infestation of the male urethra and prostate has been effectively treated by the systemic use of carbarsone, 0.25 Gm. three times daily by mouth, for not longer than ten days in conjunction with acriflavine (1:3,000) urethral instillations as topical treatment not oftener than twice weekly. In those patients in whom carbarsone orally has been ineffective, the intravenous use of oxophenarsine hydrochloride, 0.04 to 0.06 Gm., not more frequently than three times weekly, is recommended. The same precautions should be used as in use of pentavalent arsenic in the treatment of syphilis.

Prophylactic treatment is most important, as reinfection is common. The sexual partner of the patient should be examined carefully, and if infected should have concomitant therapy. Abstinence from sexual intercourse is necessary until both parties are free from the infestation.

TREATMENT OF THE SCALP

To the Editor:—I am writing in regard to hair and scalp treatment for girls who are losing their hair because of too frequent washings: 1. Is hydrous wool fat beneficial to hair and scalp? 2. Is glycerin beneficial to hair and scalp? 3. Would adding alcohol to hydrous wool fat and glycerin injure the beneficial properties of either hydrous wool fat or glycerin? Which would be more beneficial to the hair and scalp: (a) a mixture of hydrous wool fat and glycerin, (b) a mixture of hydrous wool fat, glycerin and alcohol, (c) a mixture of hydrous wool fat, glycerin, alcohol and rose or distilled water, (d) hydrous wool fat alone or (e) glycerin alone? I have advised gentle loosening of the scalp, an adequate diet, application of towels wrung free of warm water and paprika pepper added freely to the diet. Do you have other suggestions?

T. C. McCurdy, M.D., Rising Star, Texas.

ANSWER.—Evidence is lacking to warrant the conclusion that hair is ruined by frequent washings. Hydrous wool fat is a useful preparation to use when the scalp is dry and glycerin when the scalp is greasy. Both of them add luster to the hair by adhering to it. The addition of alcohol to hydrous wool fat or glycerin does not alter the properties of either and, since hydrous wool fat and glycerin serve opposite purposes, it would be inconsistent to combine the two in one prescription. Alcohol and glycerin mix readily but alcohol and hydrous wool fat do not.

In general, loosening of the scalp might serve a useful purpose and an adequate diet is always indicated. The application to the scalp of wet towels and the addition of paprika pepper to the diet are of doubtful value.

Gentle massage of the scalp and the application to it of a scalp lotion containing a rubefacient, an antiseptic, a keratolytic agent, if necessary, and an oily or drying vehicle (depending on the needs of the patient) are usually sufficient to keep the scalp in a healthy condition. All of the standard textbooks of dermatology contain formulas for such preparations. It is presumed, of course, that the patient will be given the benefit of a physical examination to rule out pertinent abnormalities.

LUPUS VULGARIS

To the Editor:—In Queries and Minor Notes, The Journal, Dec. 18, 1948, appeared a statement that treatment of lupus vulgaris with vitamin D_2 should be discontinued as soon as subjective symptoms of anorexia, loss of weight and polydypsia, or rise of blood sedimentation to 98 mm. occur. I should like to emphasize that more than anything else careful follow-up of the blood calcium level should and must be the principal guide whether medication with vitamin D_2 may safely be continued. Any increase above about 12 mg. per hundred cubic centimeters constitutes an indication that administration of vitamin D_2 should be stopped. Inasmuch as subjective symptoms may be totally absent even up to a level of 15 mg., this determination of blood calcium and follow-up should be made in all cases. Usually, symptoms do occur once a level is reached above 15 mg. per hundred cubic centimeters. In any case, subjective complaints in persons with a "less stable nervous pattern" may be voiced at any time, and with any medication, but the yardstick to continue or discontinue medication remains the blood calcium level.

Professor C. M. Hasselmann, M.D., Erlangen, Germany.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, JANUARY—APRIL 1949

Titles have been listed or abstracts made of important articles in the following journals in the Current Literature Department of THE JOURNAL during the past four months. Any of the journals, except those starred, will be lent by THE JOURNAL to subscribers in continental United States and Canada and to members of the American Medical Association for a period not exceeding three days. Three journals may be borrowed at a time. No journals are available prior to 1938. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Thus most of these journals are accessible to the general practitioner.

Acta cardiologica. Brussels.
Acta chirurgica Scandinavica. Stockholm.
Acta clinica belgica. Brussels.
Acta dermato-venereologica. Stockholm.
Acta endocrinologica. Copenhagen.
Acta medica orientalia. Jerusalem
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SUBJECT INDEX

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The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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Acad.—Academy
Am.—American
A.—Association
Coll.—College
Commn.—Commission
Comm.—Committee
Conf.—Conference
Cong.—Congress
Dist.—District
Div.—Division
Found.—Foundation
Hosp.—Hospital
Indust.—Industrial
Inst.—Institute
Internat.—International
M.—Medical
Med.—Medicine
Nat.—National
Pharm.—Pharmaceutical
Phys.—Physicians
Soc.—Society
Surg.—Surgery
Surgs.—Surgeons
S.—Surgical

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